

2023-1750

**United States Court of Appeals
for the Federal Circuit**

AVAGO TECHNOLOGIES INTERNATIONAL
SALES PTE. LIMITED,

Appellant,

— v. —

NETFLIX, INC.,

Appellee.

*On Appeal from the United States Patent and Trademark Office,
Patent Trial and Appeal Board in Nos. IPR2021-01298,
IPR2021-01334 and IPR2021-01335*

BRIEF FOR APPELLANT

DAN YOUNG
KENT DALLOW
QUARLES & BRADY LLP
Attorneys for Appellant
8210 Southpark Terrace
Littleton, Colorado 80120
(303) 268-0066
dyoung@quarles.com
kent.dallow@quarles.com

PATENT CLAIMS AT ISSUE

This appeal concerns claims 1-29 (the "Challenged Claims") of U.S. Patent No. 10,911,938 (the "'938 Patent"). Claim 1 is representative of independent claims 1, 23, and 27 for purposes of this appeal.

1. A system comprising:
 - a plurality of computing devices connected via one or more networks, wherein the system is configured to receive login information corresponding to a first user;
 - identify the first user based on the login information;
 - retrieve user configuration information corresponding to the first user;
 - control provision of a media content streaming service to a first computing device of the plurality of computing devices based on the user configuration information corresponding to the first user;
 - update the user configuration information corresponding to the first user based on the provision of the media content streaming service to the first computing device;
 - receive login information corresponding to the first user from a second computing device of the plurality of computing devices;
 - identify the first user based on the login information received from the second computing device;

retrieve the updated user configuration information corresponding to the first user; and
control provision of the media content streaming service to the second computing device based on the updated user configuration information corresponding to the first user.

Dependent claim 6 recites the following:

6. The system of claim 1, wherein
at least one of the plurality of computing devices is configured to dynamically develop the user configuration information corresponding to the first user based on the provision of the media content streaming service to the first computing device.

Dependent claim 12 is representative of dependent claims 12, 16, 26, and 29 and recites the following:

12. The system of claim 11, wherein
at least one of the plurality of computing devices is configured to control provision of the media content streaming service to the first computing device and the second computing device by selecting a version of content, from a plurality of stored versions of content, to be streamed to the first computing device or the second computing device based on the information identifying content reproduction

capabilities corresponding to the first computing device or the second computing device.

Dependent claim 18 is representative of dependent claims 17 and 18 and recites the following:

18. The system of claim 1, wherein
at least one of the plurality of computing devices is
configured to control provision of the media
content streaming service to the first
computing device and the second computing
device from a server remote from the system,
the first computing device and the second
computing device.

The Board found independent claim 30 not unpatentable. Accordingly, claim 30 is not at issue in this appeal.

**UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT**

CERTIFICATE OF INTEREST

Case Number 2023-1750

Short Case Caption Avago Technologies International Sales Pte. Ltd. v. Netfli

Filing Party/Entity Avago Technologies International Sales Pte. Ltd.

Instructions:

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2. Please enter only one item per box; attach additional pages as needed, and check the box to indicate such pages are attached.
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I certify the following information and any attached sheets are accurate and complete to the best of my knowledge.

Date: 04/28/2023

Signature: /s/ Daniel S. Young

Name: Daniel S. Young

FORM 9. Certificate of Interest

Form 9 (p. 2)
March 2023

1. Represented Entities. Fed. Cir. R. 47.4(a)(1).	2. Real Party in Interest. Fed. Cir. R. 47.4(a)(2).	3. Parent Corporations and Stockholders. Fed. Cir. R. 47.4(a)(3).
Provide the full names of all entities represented by undersigned counsel in this case.	Provide the full names of all real parties in interest for the entities. Do not list the real parties if they are the same as the entities. <input checked="" type="checkbox"/> None/Not Applicable	Provide the full names of all parent corporations for the entities and all publicly held companies that own 10% or more stock in the entities. <input type="checkbox"/> None/Not Applicable
Avago Technologies International Sales Pte. Ltd.		Broadcom Incorporated

☐ Additional pages attached

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☐ Yes (file separate notice; see below) ☒ No ☐ N/A (amicus/movant)

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☒ None/Not Applicable ☐ Additional pages attached

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STATEMENT OF RELATED CASES

Under Fed. Cir. R. 47.5(a), counsel for Appellant certifies that no other appeal from the same proceeding at the United States Patent and Trademark Office's Patent Trial and Appeal Board (the "Board") is or was previously before this Court or any other appellate court, whether under the same or a similar title.

Under Fed. Cir. R. 47.5(a), counsel for Appellant states that the Court's decision in this appeal will affect the following judicial and administrative matters: *CA, Inc. et al. v. Netflix, Inc.*, No. 3:22-cv-00373 (N.D. Cal. 2022) (transferred from *CA, Inc. et al v. Netflix, Inc.*, No. 2:21-cv-00080 (E.D. Tex. 2021)) and *Netflix, Inc. v. CA, Inc. et al*, No. 3:21-cv-03649 (N.D. Cal. 2021), which have been coordinated. This appeal arises from *inter partes* review proceeding nos. IPR2021-01298, IPR2021-01334, and IPR2021-01335, all titled *Netflix, Inc. v. Avago Techs. Int'l Sales Pte. Ltd.* Proceeding nos. IPR2021-01334 and IPR2021-01335 were consolidated with and into IPR2021-01298 (the "Consolidated IPR").

STATEMENT OF JURISDICTION

The Board had jurisdiction over this *inter partes* review ("IPR") under 35 U.S.C. §6(b)(4). The Board issued its Final Written Decision under 35 U.S.C. §318 in the Consolidated IPR on February 6, 2023. Avago Technologies International Sales Pte. Limited ("Avago") timely filed a petition for review of that decision on

April 7, 2023. Notice of Docketing, ECF No. 1. This Court has jurisdiction under 35 U.S.C. §§141 and 319 and 28 U.S.C. §1295(a)(4)(A).

STATEMENT OF THE ISSUES

1. Whether, in a case involving complex technology, the Board committed legal error in making findings of obviousness without expert evidence as to how one of ordinary skill in the art would have interpreted patent claims and references.
2. Whether the Board erred by making factual findings when the primary reference was missing portions necessary to fully understand the reference.
3. Whether the Board adopted overly broad claim constructions by:
 - a. construing the term "user configuration information" not to require information related to a user;
 - b. construing the term "based on the provision of the media content streaming service" to encompass actions based on manual input; and
 - c. construing the term "dynamically develop" to encompass all automatic updates.
4. Whether the Board's findings that claims 1-29 were unpatentable under 35 U.S.C. §103(a) are supported by substantial evidence.

STATEMENT OF THE CASE

I. Overview of the '938 Patent

The '938 Patent is titled, "Method and System for a Networked Self-Configuring Communication Device Utilizing User Preference Information." Appx3019; Appx90. The '938 Patent is directed to a system of personal electronic ("PE") devices that can store and update user configuration information ("UCI"). Appx3019. UCI includes, for example, user-specific device configuration information or user-specific operational preferences, such as favorite broadcast channels, favorite websites, or favorite games. Appx3020; Appx3022; Appx97 (3:31-48); Appx99 (7:41-67). The '938 Patent describes that the UCI facilitates use of the PE devices, such as streaming media content. Appx3022.

As described in an exemplary embodiment, a first PE device may generate, update, and store UCI. Appx3020; Appx97 (3:31-48). A second PE device may be communicatively coupled to the first PE device or the networked devices. *Id.* The second PE device may then be enabled to download existing UCI from the first PE device or networked devices. *Id.* The downloaded UCI may be used to configure the second PE device. *Id.*

The '938 Patent further teaches that the UCI can be used to control provision of streaming services. Appx3022-3023; Appx99 (7:41-67). As described in an exemplary embodiment, the UCI may specify various user specific device

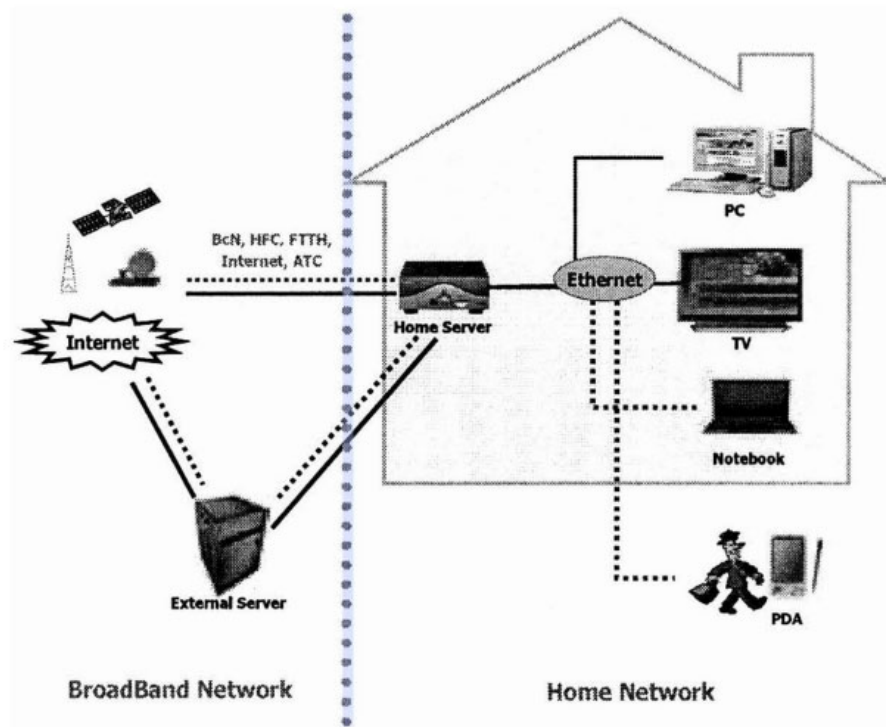
operational preferences or may specify particular devices that may be accessed to perform certain operations or to store and retrieve specific data. *Id.*

The '938 Patent explains that the networked devices are "self-configuring." Appx3019; Appx3049. The personal electronic device may enable generation, updating, or storage of UCI. Appx102 (14:51-67). The generation, updating, or storage of the UCI may be performed automatically. *Id.* The UCI may be used to configure a secondary device. Appx103 (15:1-7). That is, the devices may use the UCI for configuration without manual input. Appx3049.

II. Overview of Lee

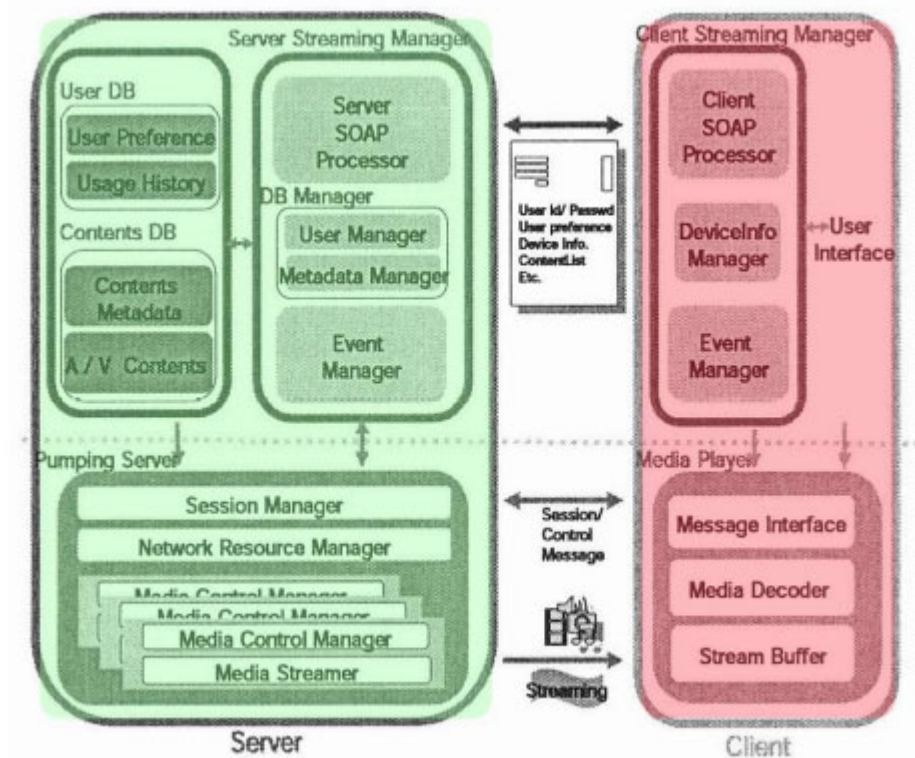
Lee, the reference primarily relied upon by the Board, is titled "Development of a Seamless Data Streaming System Based on User Preference and Device Information." Appx1129. Lee is directed to a system featuring a home server which allows streaming of content to multiple devices. Appx3042; Appx1129; Appx3125-3129. Lee focuses on storing content on a home server to allow each device to access the content exclusively from the home server so that each device does not need to download the content again. Appx1129; Appx1132-1135.

Figure 1 illustrates Lee's system with the vertical line (annotated in blue) separating Lee's home server system from "external" servers and the Internet:

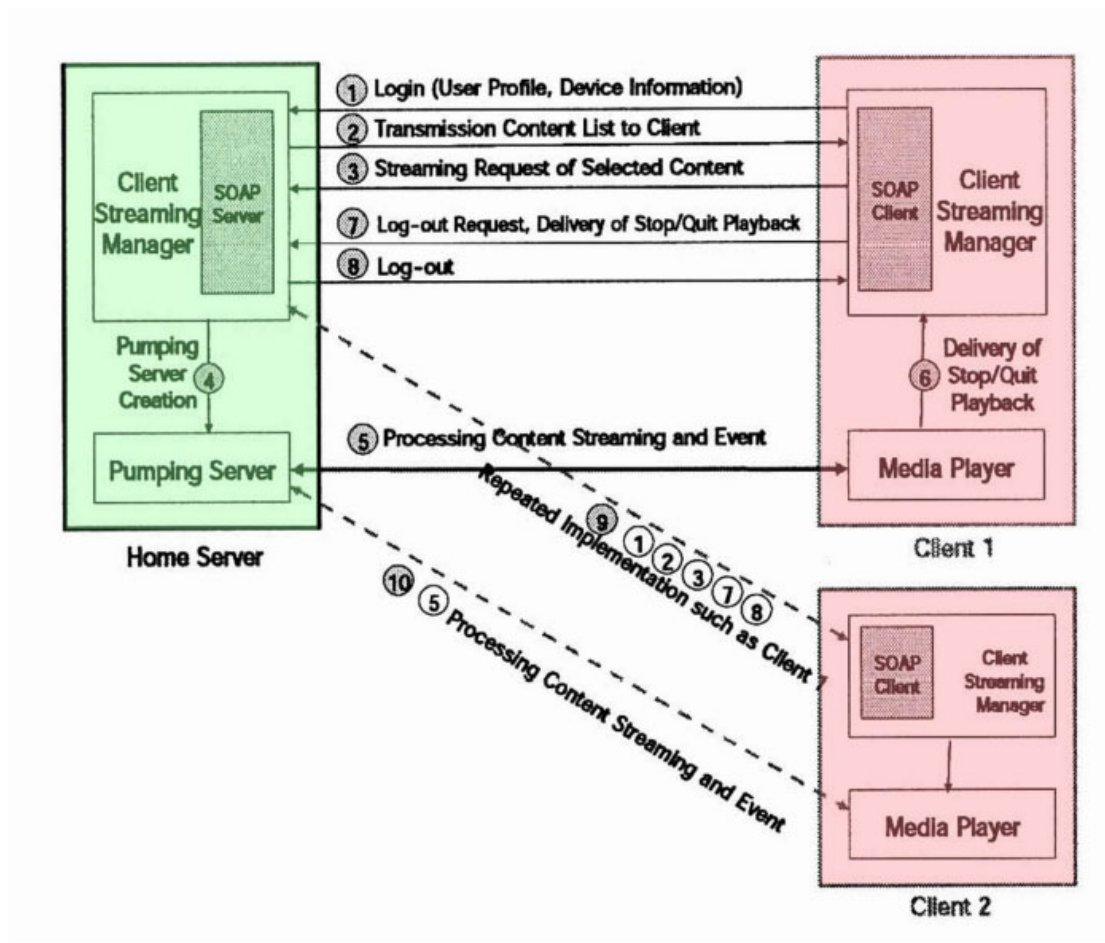


Appx3042; Appx1129 (Fig. 1(annotated)); Appx3125-3129. Lee's system includes the home server, a wired and wireless network, and a number of client devices (e.g., PC, TV, Notebook, and PDA). Appx3042; Appx1129-1130; Appx3125-3129.

Figure 3 depicts an example of Lee's client/server architecture, with the home server annotated in green and the client annotated in red:



Appx1131 (Fig. 3 (annotated)); Appx3125-3129. The interactions between the server and client are illustrated by Figure 5, annotated in the same way:



Appx1133 (Fig. 5 (annotated)); Appx3125-3129. As shown by Figure 5, a user logs in from a first client (1), the server transmits a recommended content list to the first client (2), the first client requests content from the list (3), a server streaming manager (misabeled "client streaming manager" in Figure 5) creates a pumping server (4), and the pumping server streams the requested content to the first client (5). Appx1133-1134; Appx3125-3129. When the user stops playing content from the first device, the media player delivers stop point information to the client manager (6), which sends a log out request, along with the stop point information,

to the server streaming manager (7). Appx1134; Appx3125-3129. The server streaming manager then performs the log out (8). *Id.* When a second streaming request is received (9), the process is repeated, and if the second request is from the same user, the server offers to resume playback from the stop point. *Id.* Figure 8¹ illustrates the user interface on the client that allows the user to choose whether to resume from the stop point:



¹ The copy of Lee provided as an exhibit in the IPRs is unclear. Reproduced Figure 8 is taken from the best copy available.

Appx1134 (Fig. 8 (annotated)); Appx3125-3129. Based on the selection by the user, the pumping server will stream the content to the user, either resuming from the stop point or starting over (10). Appx1134; Appx3125-3129.

As described in the title and throughout Lee, Lee describes a system that provides multimedia content based on user preference information (e.g., favorite movies) and device information (e.g., CPU capability). Appx1129; Appx1131-1132. Lee's system does not automatically determine content recommendations. Appx1135. In fact, Lee states, "[f]urther studies on determining the preferred content by automatically figuring out the user's preferences and device character information are necessary." *Id.*

III. Overview of Smith

Smith is titled "Transcoding Internet Content for Heterogeneous Client Devices." Appx1375. Smith describes a complex "system for the network-based transcoding of Internet content in order to improve the accessibility of a wide range of client devices to the content on the Internet." Appx1378. The system retrieves, analyzes, and ingests the Internet content into an InfoPyramid framework. *Id.* The transcoding system selects the content from the InfoPyramid by assessing the various content alternatives using content selection algorithms to adapt the Internet content to the client devices. *Id.*

Smith's focus is real-time transcoding of Internet content. Appx3095; Appx1378; Appx3182-3183 (¶123). Smith describes "a network-based solution for transcoding Internet content" in order to improve the utility of internet devices that "have limited communication, processing, storage and display capabilities." Appx1375. Smith's "transcoding system utilizes a policy engine to evaluate the alternatives for adapting the content to client devices." Appx1377. Smith includes a single reference to pre-materializing alternate versions of the Internet content, storing them at the server, and then selecting one of the versions to deliver to the client. Appx1375-1376.

IV. Claims at Issue

The Board's determinations resulted from erroneous claim constructions and several erroneous findings of fact regarding whether Lee discloses certain elements of independent claims 1, 23, and 27 and certain elements of dependent claims 6, 8, 12, 16, 17, 26, and 29. With respect to each of the Board's findings for the independent claims, claim 1 is illustrative:

1. [1pre] A system comprising:
 - [1a] a plurality of computing devices connected via one or more networks, [1b] wherein the system is configured to receive login information corresponding to a first user;
 - [1c] identify the first user based on the login information;

- [1d] retrieve user configuration information corresponding to the first user;
- [1e] control provision of a media content streaming service to a first computing device of the plurality of computing devices based on the user configuration information corresponding to the first user;
- [1f] update the user configuration information corresponding to the first user based on the provision of the media content streaming service to the first computing device;
- [1g] receive login information corresponding to the first user from a second computing device of the plurality of computing devices;
- [1h] identify the first user based on the login information received from the second computing device;
- [1i] retrieve the updated user configuration information corresponding to the first user;
and
- [1j] control provision of the media content streaming service to the second computing device based on the updated user configuration information corresponding to the first user.

Appx103 (15:53-16:11).

The Board found independent claim 30 not unpatentable. Appx58-60. Accordingly, claim 30 is not at issue in this appeal.

V. The Board's disavowal of Netflix's expert

The Board disclaimed any reliance on Netflix's expert, Mr. Gray, in its Final Written Decision. Appx11-13. Avago presented evidence that Mr. Gray's qualifications fell below the qualifications of a POSITA. Appx3036-3037. The Board did not resolve whether Netflix's expert, Mr. Gray, met the qualifications of a POSITA, but nonetheless declined to rely on his testimony. Appx13.

Even though it had relied on Mr. Gray's testimony in its Institution Decisions, the Board explained that Mr. Gray's testimony would not have changed its patentability determinations. Appx13-14. The Board reached this conclusion despite recognizing that attorney argument is not evidence. Appx41 (n.20).

Given that the Board declined to rely on Mr. Gray's testimony, the Board's factual findings are unsupported by expert testimony. Appx13-14. The Board, however, did not reexamine the aspects of its prior findings that were based on Mr. Gray's testimony. *See* Appx693-695; Appx754-757; Appx762-764; Appx721-723; Appx728-732.

VI. The Board's findings of obviousness

The Board found that independent claims 1, 23, and 27 were rendered obvious by Lee for the same reasons. Appx57-58. The Board found that dependent claims 2-

4, 6-11, 13-15, 17-22, 24, 25, and 28 were rendered obvious by Lee. Appx60-72. The Board found that dependent claim 5 was rendered obvious by Lee in view of Glance. Appx72-75. And the Board found that dependent claims 10-16, 26, and 29 were rendered obvious by Lee in view of Smith. Appx75-85. Consequently, the Board's findings concerning Lee serve as the foundation for its findings concerning the validity of each challenged claim. The Board's unpatentability findings are based only on obviousness, not anticipation. Appx86.

A. The Board's claim constructions

1. The Board's construction of "user configuration information"

The parties disputed the meaning of "user configuration information." Appx16. Avago argued that user configuration information should be given its plain and ordinary meaning, which is "information, related to a user, that is used for configuration." Appx16. In the Final Written Decision, the Board used Avago's construction for its analysis. Appx16.

The Board, however, identified additional disputes about the meaning of UCI. Appx16-18. First, Avago argued that UCI is unique to a user. The Board found no support for UCI unique to a user despite the Board quoting the specification's statement that UCI includes "information pertaining to device configuration and/or operational preferences *specific to the device user* and/or various use settings, network connectivity, service access, secure access information, network and service

access information and/or preferences that are *unique to particular users*, and/or manner of use of available resources." Appx6 (emphasis added); Appx16.

Second, Avago argued that UCI is limited to information used for configuration. The Board again found "no support" for this interpretation despite referencing the specification's disclosure that UCI includes "information pertaining to device configuration." Appx17; Appx6.

2. The Board's construction of "control provision of a media content streaming service"

All independent claims include the term "provision of a media content streaming service." Appx18. Although the parties did not propose a construction for "provision of a media content streaming service," the Board construed the term to clarify the scope. *Id.*

The Board determined that controlling provision of a media content streaming service "can include, but is not limited to, controlling streaming of media content." Appx19. The Board further determined that, despite the term containing the phrase "streaming service," the term does not require streaming. Appx12 ("[Avago] erroneously assumes that this requires streaming."). The Board found that this term means provisioning a service in general, which can include such non streaming actions as "provid[ing] a recommended content list," providing a "login interface," or "perform[ing] other associated functionality." Appx18; Appx54.

The Board further determined the meaning of this term when analyzing claim 18, which requires "at least one of the plurality of computing devices is configured to *control provision of the media content streaming service* to the first computing device and the second computing device *from a server remote* from the system, the first computing device and the second computing device." Appx66-68 (emphasis added and omitted). The Board identified that the parties disputed the scope of this limitation in the context of claim 18. The Board declined to construe this term to require that the remote server stream content to the client devices because it found that the claims are not limited to streaming. Appx70.

Further, the Board interpreted "the claim language to require that a computing device control provision of the claimed service to the claimed first and second computing devices, and at least some portion of that service comes from a remote server." Appx69. Thus, the Board found that the phrase "controlling provision of the media content streaming service" only requires that some portion of the service comes from a remote server. Appx69. The Board found that this claim language was satisfied by the disclosure that "Lee's home server controls provision of the service to client 1 and client 2, and at least some portion of the service (namely, content) comes from a remote server (or a third system)." Appx69-70.

3. The Board's implicit construction of "based on the provision of the media content streaming service"

The Board implicitly construed the term "based on the provision of the media content streaming service." Appx34-35. This term appears in each independent claim. Appx103 (15:53-16:11); Appx104 (18:12-36); Appx105 (19:9-37).

The Board found that this limitation encompasses manual updates from a user. Appx34. For example, the Board determined that a user's manual update to user preferences is an update "based on the provision of the media content streaming service" because the server ultimately updates its database. Appx34. The Board rejected the testimony from Avago's expert, Dr. AlRegib, that "a manual update to user preferences, through a user interface, is not the same as the system updating the user preferences based on provision of the media content streaming service." Appx34 (citing Appx3131-3132 (¶44)). Despite the plain claim language, the Board construed the term "based on the provision of the media content streaming service" to encompass manual actions so long as a server is ultimately updated. Appx34-35.

4. The Board's implicit construction of "dynamically develop"

The Board implicitly construed the term "dynamically develop" in its analysis of claim 6. Appx60-62. The Board found that "dynamically develop" is satisfied by automatic updates or updates "as needed." Appx61. The Board found that Lee discloses dynamically developing the UCI based on its finding that Lee automatically updates usage history and stop points and makes changes to this UCI

as needed. Appx61. The Board found that claim 6 does not require anything more than an automatic update to satisfy the "dynamically develop" limitation. *Id.* The Board also found that the dictionary definitions of dynamically did not change its conclusion even though the dictionaries defined dynamic as characterized by continuous activity or change. Appx61-62; Appx3079. The Board did not credit Dr. AlRegib's testimony that recording changes after provision of the content has stopped does not constitute dynamically updating. Appx62 (disregarding Appx3164-3166 (¶¶94-98)).

B. The Board's UCI findings

The parties disputed whether Lee discloses UCI that satisfies claim elements 1d, 1e, 1f, 1i, and 1j. Appx30.

1. The Board's analysis of Lee's user preferences

The Board found that Lee's user preferences satisfy disputed claim element 1f. Appx31. According to the Board, Lee's server stores and maintains user preferences (such as preferred genres and directors). Appx31. After a user logs on, the server retrieves the corresponding user preferences and provides a recommended content list to the user. Appx31. "Lee's server sends the recommended content list to [the] client device the user is currently using." Appx31.

The Board also found that Lee's user preferences satisfy element 1f, which requires the system configured to "update the user configuration information . . .

based on the provision of the media content streaming service." Appx32; Appx103 (15:64-66). The Board recognized that Lee discloses setting user preferences but not updating user preferences. Appx32. Without relying on expert testimony, the Board found that an ordinarily skilled artisan would have assumed that a user can later change the user preferences. *Id.* Without relying on expert testimony, the Board found that an ordinarily skilled artisan would have understood that the manual updates by a user cause a corresponding update to the user preferences stored in Lee's home server. Appx33-34.

2. The Board's analysis of Lee's usage history

The Board found that Lee's usage history qualifies as UCI and satisfies disputed claim elements 1d, 1e, 1f, 1i, and 1j. Appx36. The Board found that usage history is the information the content user has played through the streaming service. Appx36.

The Board found that Lee's usage history qualifies as UCI under Netflix's proposed construction. Appx37. Netflix argued that usage history is UCI because it "falls within a UCI category identified by the '938 specification," and referenced the '938 specification's disclosures of "website access information," "use settings," and "use of available resources." Appx134-135. Even though none of the items Netflix identified are usage history, the Board found that Lee's usage history

qualified as UCI under Netflix's construction because these other types of information are examples of UCI. Appx37.

The Board also found that usage history qualified as UCI under Avago's construction, which requires information, related to a user, that is used for configuration. Appx38. In finding that Lee's usage history is used to configure the recommended content list, the Board focused on the single clause in Lee that states that a user "is presented with a recommended content list created based on usage history, which is the information of the content the user has played through the streaming service." Appx36 (quoting Appx1133 (§3.1)). The Board concluded that Lee's usage history is associated with a user and used to configure the recommended content list. Appx38.

Avago and Dr. AlRegib explained why, when read in context, this clause did not support the Board's finding, but the Board found that Avago's arguments did not undercut or contradict this teaching without relying on supporting expert testimony. Appx38-39. Lee's authors recognized that their system could not determine preferred content automatically based on user preferences or device information. Appx1132. In light of this admission by Lee's authors, Avago set forth evidence that a POSITA would have understood that Lee's recognition that user preferences cannot be used to determine preferred content automatically also means that usage history cannot be used to determine preferred content automatically. Appx3055;

Appx3139-3141 (¶¶55-56). The Board, however, found that these passages did not undercut Lee's teaching. Appx38.

Avago also argued that the usage history described in Lee is simply the timestamp used to implement Lee's stop point functionality. Appx3053-3055; Appx3976-3981. Without expert testimony, the Board interpreted Lee as disclosing that the "Usage History database stores and manages a 'content list' *and* 'the timestamp' information." Appx42 (citing Appx1132 (§2.5)). In making this finding, the Board assumed that the "content list" was different from the "recommended content list." Appx43 (n.22). The Board also found that the content list includes a list of all content the user watched. Appx36. From this disclosure, the Board concluded that Lee discloses that the Usage History database stores a list of previously viewed content along with a corresponding timestamp identifying the stop point of the most recent streaming of the content. Appx42-43.

The Board made these findings without considering the TV-Anytime Specification, which was not part of the record. Appx48. Lee explains that the TV-Anytime Specification defines the schema and metadata used in the User History DB, which "stores/manages content list and the timestamp" information. Appx1132 (§2.5).

The Board also found that Lee retrieves the usage history, updates the usage history, and controls provision of the multimedia streaming service based on it.

Appx44. The Board again relied on its finding that the recommended content list is created based on usage history and concluded, without expert testimony, that a POSITA would have understood that UCI should be retrieved before it can be used.

Appx44. According to the Board, "Lee's server 'retrieve[s]' usage history corresponding to the user and 'control[s]' provision of the service based on that usage history (by providing a recommended content list based on that history), satisfying elements 1d and 1e." Appx37.

The Board found that Avago's arguments addressing the single sentence in §3.1 were untimely. Appx39 (n.19). The Board made this finding even though Avago raised its interpretation in its patent owner response and directly responded to arguments Netflix raised in its reply. Appx3051-3055; Appx3972-3982.

3. The Board's analysis of Lee's user conditions

The Board found that Lee's user conditions—stop points indicating the point where contact playback was stopped—satisfy disputed elements 1e and 1j. Appx45. When a user stops streaming content, the device sends a "stop point" to the server identifying the point at which playback of the content was stopped. *Id.* If a user later selects that content from the recommended content list, then a window pops up asking if data streaming is to be continued. *Id.* If the user selects consecutive playing, the server is notified and streaming resumes. *Id.*

The Board recognized that Lee's stop points could not satisfy the claim limitations unless they are updated (i.e., playing is resumed then stopped again with the second stop point recorded). Appx46. That is, the first time a user watches a show, there is no stop point saved, so the nonexistent content stop point cannot control provision of the media content streaming service. Appx3144-3145 (¶66). Even though Lee does not explicitly disclose updating stop points, the Board found, without expert testimony, that an ordinarily skilled artisan would have understood Lee to disclose updating a prior stop point. Appx46-47.

The Board also found that Lee's stop points satisfy limitations 1e and 1j, which require a system configured to "control provision of a media content streaming service . . . based on the user configuration information." Appx47-48. The Board recognized that Lee's system will only resume playing from the content stop point when the user selects consecutive playing. *Id.* The Board concluded that Lee's resumption of playing based on the user's selection satisfies the 1e and 1j requirement that the update to the UCI be "based on provision of the media content streaming service" even though the resumption of playing was based on the user's manual input. Appx32-34.

4. The Board's analysis of Lee's client device information

The Board found that client device information qualifies as user configuration information and satisfies disputed elements 1d, 1e, 1f, 1i, and 1j. Appx49-56. The

Board recognized that Lee's client device information relates to characteristics of the device's hardware and software, such as media codec, display size, and network bandwidth. Appx51. Even though this information describes the characteristics of a client *device* (which could have numerous users), the Board found that this information constitutes *user* configuration information. Appx50.

The Board also found that Lee discloses updating client device information based on provision of the media content streaming service. Appx54-55. The Board found that Lee teaches that the client device sends its information each time it connects to the server. Appx51. Without expert testimony, the Board found that "an ordinarily skilled artisan would have understood this to mean that Lee updates the client device information at least when a new device is used or when a previously-used device's information has changed." *Id.* The Board made this factual finding even though Avago's expert testified that Lee does not disclose updating client device information based on provision of the streaming service. Appx3155-3156 (¶¶79-80).

The Board disagreed with Avago's argument that Lee discloses that client device information is updated at login based on the characteristics of the device, not provision of the media content streaming service. Appx54. The Board agreed with Netflix that provision of the media content streaming service includes provision of the login interface. *Id.* The Board made this finding despite Avago's expert

testimony that a POSITA would not understand that receiving login information constitutes provision of the media content streaming service. Appx3069-3071; Appx3155-3156 (¶¶79-80).

C. The Board's obviousness findings for claim 6

The Board found that Lee teaches the limitations of claim 6, which require that at least one of the plurality of computing devices is configured to dynamically develop the UCI corresponding to the first user based on the provision of the media content streaming service. Appx60. Even though claim 6 requires one of the computing devices to "dynamically develop" UCI, not just automatically update UCI, the Board found that Lee's alleged teaching of automatically updating the usage history and stop points teaches this limitation. Appx61.

D. The Board's obviousness findings for claims 17 and 18

The Board found that Lee discloses "control[ling] provision of the media content streaming service to the first computing device and the second computing device from a server remote from the system, the first computing device and the second computing device," as recited in claim 18. Appx66 (emphasis omitted). The Board also found Lee disclosed the similar requirements of claim 17, which recites "a third system communicatively coupled to the system via a network" instead of a "server remote from the system." *Id.*

The Board found that there was no dispute over what Lee teaches. Appx68. "Lee teaches that its external server is the source of the multimedia content that is ultimately streamed to the client devices." *Id.* Lee's home server acquires content from the external server and stores or caches at least some of the content on the home server before streaming it to the client devices. *Id.* The Board found that Lee's home server caches content even though Lee does not describe caching or even use the word cache. *See* Appx90-105; Appx70. The Board found that Lee's external server qualifies as the "third system" (claim 17) and the "server remote from the system" (claim 18). *Id.*

The Board found that Lee's system met the requirement that one of the computing devices is configured to "control provision of the media content streaming service . . . from a server remote from the system" because the home server received and stored content from the remote server. Appx67-70. Even though the claim language requires a computing device to control provision from the remote server to the first and second computing devices, the Board found that Lee satisfies this element because some portion of the service comes from a remote server and is downloaded to the home server which then controls provision of the media content streaming service to the first and second computing devices. *Id.*

E. The Board's obviousness findings for claims 12, 16, 26, and 29

The Board found that claim 12 was obvious in view of Lee and Smith. Appx76-83. Without relying on expert testimony, the Board found that it would have been obvious to combine Lee with Smith to arrive at the system of claim 12. *Id.*

The Board recognized that Lee does not disclose all of the limitations of claim 12. Appx79. The Board recognized that Lee "does not teach selecting a version of content for streaming from a plurality of stored versions." *Id.* The Board stated, without expert testimony, that the subject matter of claim 12 would have been obvious to a POSITA if a POSITA would have been motivated to configure Lee's home server to be able to select a version of content from two stored versions of that content for streaming to a client based on the client's capabilities. Appx79-80.

The Board found that Smith teaches a method that uses a device's capabilities and network conditions to supply a device with playable content. Appx80. The Board found that Smith teaches that content can be transcoded in real-time. Appx81. Based on a single sentence in Smith, the Board found that Smith also discloses that content can be pre-materialized and stored at the server. *Id.* Despite Lee's expressed concern that "most users' connections are not fast enough to download large chunks of multimedia data," the Board found that a POSITA would have been motivated to modify Lee to store two versions of content at the home server. Appx1129; Appx81.

The Board did not agree with Avago's arguments, which were supported with Dr. AlRegib's testimony. Appx82. The Board, without expert testimony, concluded that a POSITA would have been motivated despite the disadvantages. *Id.*; see Appx3183-3185 (¶¶125-127). For example, Smith teaches that the system should "optimize the selection of the content alternatives" based on a number of factors, including different target modalities and fidelities, data sizes, and maximum data sizes "derived from the user's specified maximum load-time and the network conditions." Appx3183-3184 (¶125) (quoting Appx1377-1378). The benefits of such optimization would be lost in an implementation that prematerialized the alternate versions of content, because the disclosed optimization is necessarily multi-factorial and depends on multiple real-time conditions. Appx3183-3184 (¶125). Further, Dr. AlRegib explained that, in a home-server based network such as Lee's, different clients (e.g., a TV, a tablet, a phone, a PC) might all have quite different capabilities, and that transient network conditions (especially in a Wi-Fi network, as Lee teaches) can offer significantly different performance at different times. Appx3184 (¶126). As such, to prematerialize optimized alternate versions, the home server would have to store dozens of different versions of each piece of content. *Id.* The Board found these disadvantages "unavailing" without any contrary expert testimony. Appx83.

The Board found that claims 16, 26, and 29 contain limitations similar to claim 12. Appx84-85. The Board found those claims obvious for reasons similar to those regarding claim 12. *Id.*

F. The Board's remaining obviousness findings

The Board found that dependent claims 2-5, 7-11, 13-15, 19-22, 24, 25, and 28 were rendered obvious by Lee alone or by Lee in view of Glance or Smith. Appx87.

SUMMARY OF ARGUMENT

The Board erroneously found the Challenged Claims to be unpatentable as obvious. The Board's factual findings of invalidity are not supported by any expert testimony of one skilled in the art. Given the complexity of the technology at issue, the Board improperly substituted its own analysis of the references in obviousness findings.

The Board compounded its erroneous analysis by failing to rely on a complete prior art reference. The Lee reference incorporates the TV-Anytime Specification, which defines numerous terms throughout Lee and explains how the system functions. The TV-Anytime Specification, however, was not part of the record.

To fit the unclear and incomplete disclosures from Lee into the claim language, the Board impermissibly broadened the claim terms "user configuration information," "based on the provision of the media content streaming service," and "dynamically develop." Using these broad constructions, without expert testimony and on an incomplete record, the Board made numerous erroneous factual findings with respect to what Lee teaches and whether it would have been obvious to combine Lee with Smith. The Board's findings that the asserted references invalidate claims 1-29 must be reversed.

ARGUMENT

I. Standard of Review

The Court reviews "the Board's legal conclusions de novo and its fact findings for substantial evidence." *OSI Pharms., LLC v. Apotex Inc.*, 939 F.3d 1375, 1381 (Fed. Cir. 2019). The substantial evidence standard asks, "whether a reasonable fact finder could have arrived at the agency's decision," and "involves examination of the record as a whole, taking into account evidence that both justifies and detracts from an agency's decision." *Id.*

The Court reviews the Board's claim construction determinations and its evaluation of the intrinsic record de novo and reviews any underlying factual findings for substantial evidence. *See Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 322, 331 (2015); *Kaken Pharm. Co., Ltd. v. Iancu*, 952 F.3d 1346, 1350 (Fed. Cir. 2020). This standard applies equally to instances where the Board implicitly construed claim terms. *See Samsung Elecs. Co., Ltd. v. UUSI, LLC*, 775 F. App'x 692, 696 (Fed. Cir. 2019).

II. The Board erred in its obviousness determinations

A. The Board erred by making unpatentability determinations without expert testimony

The Board's findings regarding the disclosures of Lee and Smith are unsupported by substantial evidence. In fact, the Board had *no expert evidence* to support its conclusion as to how one skilled in the art would have interpreted the

patent claims and the references at issue. The Board recognized that attorney arguments have little probative value, Appx41 (n.20), but used Netflix's attorney argument for the foundation of its findings.

Together with its petitions,² Netflix submitted extensive declarations (the shortest of which was 143 pages) by its expert, Stephen Gray. In its Institution Decisions, the Board relied extensively on these declarations in assessing the references. *See* Appx754-757; Appx762-764; Appx721-723; Appx728-732. Avago presented evidence that Mr. Gray did not meet the requisite level of skill in the art, either with respect to his education or his experience. Appx3035-3037. In its Final Written Decision, the Board disclaimed any reliance on Mr. Gray's testimony. Appx13. The Board nevertheless proceeded to make factual findings regarding what one skilled in the art would have understood with respect to the references in the absence of any supporting expert testimony—and despite contradictory evidence of Avago's expert. This was error.

Typically, expert testimony will be necessary in cases involving complex technology. *Centricut, LLC v. Esab Grp., Inc.*, 390 F.3d 1361, 1370 (Fed. Cir. 2004), *cert. denied*, 546 U.S. 814 (2005) (holding that, in cases involving complex technology, one party cannot satisfy its burden of proof by relying only on testimony

² Netflix filed three IPR petitions, which were consolidated into IPR2021-01298. Appx1.

of non-experts where the other party offered expert testimony). Although the PTAB need not consider or rely upon expert testimony in all cases, *VirnetX Inc. v. Apple Inc.*, 665 F. App'x 880, 884-85 (Fed. Cir. 2016), in cases involving technology that is complex and "beyond the comprehension of laypersons," expert testimony can be essential. *Synopsis, Inc. v. Mentor Graphics Corp.*, 814 F.3d 1309, 1320 (Fed. Cir. 2016), *overruled on other grounds by Aqua Prods., Inc. v. Matal*, 872 F.3d 1290 (Fed. Cir. 2017) (quoting *Centricut*, 390 F.3d at 1369).

Additionally, the PTAB cannot "simply reach conclusions based on its own understanding or experience—or on its assessment of what would be basic knowledge or common sense." *Fanduel, Inc. v. Interactive Games LLC*, 966 F.3d 1334, 1344 (Fed. Cir. 2020). This case is unlike *Belden*, in which the PTAB was "entitled to rely on its own reading" of the prior art concerning "a simple point in a mechanical field." *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1074 (Fed. Cir. 2015). Nor is this case like *VirnetX*, in which the PTAB relied upon its expertise and experience to determine that a POSITA would have understood a prior art reference to a computer to include a notebook computer but "did not address more complex questions about computer technology whose resolution would benefit from essential expert testimony." *VirnetX*, 665 F. App'x at 888.

The technology involved is complex. The Board found that the level of skill in the art corresponds to a bachelor's degree in computer science, electrical

engineering or a similar field and three years of experience with networked communication devices, or a master's degree in electrical engineering, computer science, or a similar field with an emphasis in networked communication devices. Appx11. The Board excluded Netflix's expert when Avago explained that he was not a person of ordinary skill in the art for the claimed technology. Appx12-14. The system of networked communication devices providing streaming media content and self-configuring based on user preference information is type of complex technology that requires testimony and analysis from one of ordinary skill in the art. *See Proveris Scientific Corp. v. Innovasystems, Inc.*, 536 F.3d 1256, 1267 (Fed. Cir. 2008); *Aspex Eyewear, Inc. v. Concepts In Optics, Inc.*, 111 F. App'x 582, 588 (Fed. Cir. 2004) (finding it to be a "rare case[] where the invention is so simple that expert testimony is not required").

The cited references are similarly complex and require explanatory expert testimony. Indeed, any "claim that the technology is simple is belied by the fact that both sides believed it necessary to introduce extensive expert testimony regarding the content of the prior art." *Alexsam, Inc. v. IDT Corp.*, 715 F.3d 1336, 1348 (Fed. Cir. 2013). Netflix introduced the prior art evidence solely through its expert's declarations. Appx946-1128. Netflix relied heavily on its expert to describe and explain the content of the references and their application to the Challenged Claims. *See generally* Appx110-384. That the Board itself relied on Mr. Gray's observations

and analysis of the references when deciding whether to institute the IPRs further demonstrates that expert analysis is necessary to properly assess Netflix's obviousness contentions. *See* Appx754-757; Appx762-764; Appx721-723; Appx728-732.

Having now disclaimed any reliance on Mr. Gray's testimony, the Board improperly substituted its own analysis of the references in making its obviousness findings. But, as this Court has explained, "in a contested proceeding involving 'resolution of conflicting private claims to a valuable privilege,' it is particularly important that the agency's decision on issues of fact be limited to the written record made before the agency." *Brand v. Miller*, 487 F.3d 862, 868-69 (Fed. Cir. 2007). The Board's role in contested proceedings is that of "an impartial adjudicator of an adversarial dispute." *Id.* at 869; *see also In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278 (Fed. Cir. 2015) (recognizing that IPRs are "adjudicatory rather than an examination"). Where, as here, the references and the patent claims are not easily understandable, "it is impermissible for the Board to base its factual findings on its expertise, rather than on evidence in the record." *Brand*, 487 F.3d at 869.

The Board's Final Written Decision is replete with findings not supported by any expert evidence—even where such evidence is required, such as for determining the understanding of one skilled in the art. *See, e.g.,* Appx32; Appx46; Appx47; Appx51; Appx57; Appx64; Appx79-82. For example, the Board found that "a

person of ordinary skill in the art would have been motivated to combine Lee and Smith to select a stored version of content on Lee's server because it would reduce computational burden at the server" because a reduction of storage space "is a predictable engineering tradeoff that would not have meaningfully diminished the ordinary skilled artisan's motivation." Appx81-82.

In the absence of credible supporting expert evidence, these findings are not supported by substantial evidence in the record, and therefore cannot support an ultimate finding of unpatentability. *Cf. Aspex Eyewear*, 111 F. App'x at 588 n.8 (attorney argument cannot substitute for testimony of one of skill in the art). This error alone mandates reversal.

B. The Board erred by relying on an incomplete prior art reference

The Board erred by relying on the facially incomplete Lee reference in making factual determinations and conclusions on obviousness. Much of how Lee's system works is governed by the TV-Anytime Specification, which was not part of the record. The Federal Circuit recognized that the PTO cannot rely on a reference when the missing portions are "necessary to a full understanding" of the reference. *In re Enhanced Sec. Rsch., LLC*, 739 F.3d 1347, 1356, 1357 n.14 (Fed. Cir. 2014).

The TV-Anytime Specification is necessary to understand Lee. Appx3053-3054; Appx3983-3984. Lee describes the TV-Anytime Specification as disclosing critical information for how its system operates. Lee explains that the TV-Anytime

Specification contains the definitions for the XML Metadata Schema. Appx1130-1132 ("It has to be constituted according to the XML Metadata Schema defined in TV-Anytime") (endnotes omitted). The TV-Anytime Specification provides the user preferences content classification for the user database. Appx1132 (§2.5) ("Table 1 represents genre details used in this study based on the user preferences content classification provided by TV-Anytime Specification version 1.1."). Lee further explains that the User History DB and content database are managed by the schema defined in the TV-Anytime Specification. *Id.* ("[User History DB] is managed by Metadata and follows the schema defined in TV-Anytime Specification 006."); *id.* (§2.6) ("Used Metadata Schema follows the Schema defined in TV-Anytime Specification 006."). Thus, the TV-Anytime Specification is necessary to understand the relationships and constraints among data in Lee's system, including the User History DB, mapping table, and the content database, relied on heavily by the Board in its Final Written Decision. Appx3137-3138 (¶53); Appx38-44; *see, e.g.*, Appx42-43 ("[W]e find that Lee teaches that its Usage History database stores a list of previously viewed content along with a corresponding timestamp identifying the stop point associated with most recent streaming of that content.").

Despite these disclosures, the Board summarily dismissed the TV-Anytime Specification as irrelevant. Appx48-49 ("[T]he TV-Anytime Specification has no

apparent relevance to the disputed issues in this proceeding."). The Board's speculation cannot substitute for actual evidence that the missing specification is meaningless—particularly, without any expert testimony to support its position.

This is particularly true where Lee indicates that the missing portions are relevant and necessary. In addition to the metadata schema definitions, Lee is replete with defined terms finding their definitions in the TV-Anytime Specification, including the following terms: "Metadata," "XML Metadata Schema," "Database Manager," "User Manager," "Mapping Table," "User DB," "Usage History," "Content DB," and "User History DB." Appx1130-1132. These definitions and the associated defined terms concerned critical aspects of the teachings of Lee and are thus necessary to a full understanding of the reference. For example, without reviewing the TV-Anytime Specification, the Board found that Lee's "Usage History database stores a list of previously viewed content" even though the Usage History database is defined by the TV-Anytime Specification. Appx42-43; Appx42 (n.21) (equating the User History DB to the Usage History Database); Appx1132 (§2.5) ("User History DB . . . is managed by Metadata and follows the schema defined in TV-Anytime Specification 006.").

Despite Netflix's failure to include the TV-Anytime Specification cited by Lee in any of its petitions, the Board made detailed findings concerning aspects of Lee that indisputably incorporate the TV-Anytime Specification. This was error.

Cf. Enhanced Sec. Rsch., 739 F.3d at 1360 (O'Malley, J., dissenting) ("Where a reference is proffered by an interested party with control over all information relating to that reference, it is not too much to ask that the proffer be complete in all material respects."). This error provides an independent basis for reversal.³

C. The Board erred in finding that Lee renders obvious claims 1, 23, and 27

The Board erred in finding that any of Lee's four categories of UCI (1) qualify as UCI and (2) satisfy all elements of the claims. The Board's conclusion that Lee renders obvious claims 1, 23, and 27 should be reversed.

1. Lee's user preferences do not satisfy the disputed elements

The Board erred in finding that Lee's user preferences (such as preferred genres and directors) satisfy disputed claim element 1f. The Board's finding is based

³ The Board incorrectly found, and without explanation, that Avago's sur-reply arguments about the importance of the TV-Anytime Specification were untimely. Appx48. However, Avago raised the TV-Anytime Specification argument in the patent owner response when explaining that usage history is not UCI and rebutting Netflix's contention that Lee's Mapping table is used to index the user's preferences. Appx3053-3054 (criticizing Netflix's expert for failing to explain "how the Mapping Table is influenced by the TV-Anytime Metadata Schema"). Avago elaborated on this argument in the sur-reply when further explaining why usage history is not UCI. Appx3978 (n.4). Avago also raised the missing TV-Anytime Specification argument in response to Netflix's reply. Appx3978; Appx3983. Avago relied on the missing TV-Anytime Specification in its sur-reply to respond to these arguments. Appx3977-3978; Appx3978 (n.4) (explaining that the user database is managed by the TV-Anytime Specification, which is not part of the petition); Appx3983 ("Petitioner argues that it would be obvious to modify Lee to make multiple uses of the stop point functionality, without even knowing how Lee works.").

on its erroneous understanding of the plain claim language and on assumptions unsupported by Lee or expert testimony.

a) The Board committed legal error by broadening the meaning of "based on the provision of the media content streaming service"

The Board erred in construing this term to encompass manual updates. Appx34. This error should be reviewed de novo because the parties' dispute relates to claim scope.

Under the correct construction, even if Lee discloses updating the user preferences (as discussed below, Lee does not), those updates are not "based on the provision of the media content streaming service," as required by limitation 1f. Appx3048-3049; Appx3969. The Board found that Lee suggests "manually updating the user preferences." Appx32. The Board determined that a user's manual update to user preferences is an update "based on the provision of the media content streaming service" because the user manually updates preferences using the user interface, and the home server ultimately updates its database. *Id.* Manual updates, however, do not satisfy the claim language because those updates are not "based on provision of the media content streaming service." Appx3049.

The Board misconstrued the plain language of the claim. As the Federal Circuit made clear in *Phillips*, a claim construction analysis should start with the words of the claims and the specification. *Phillips v. AWH Corp.*, 415 F.3d 1303,

1312-13 (Fed. Cir. 2005) (en banc). Claim 1 requires a system configured to update the UCI based on provision of the media content streaming service. Appx103 (15:53-67). This requirement means that the *system* uses the provision of the multimedia content streaming service to update the UCI. Appx3131-3132 (¶44). The claim does not encompass manual updates to UCI because it is the system that must be updating the UCI and because the update must be based on provision of the multimedia content streaming service. *Id.*

The Board's construction also conflicts with the specification of the '938 Patent. Central to the Board's findings is the fact that the specification describes that the "updating of the user configuration information may be performed manually, based on user commands for example, which may [be] communicated directly into the system." Appx101 (11:45-48). In the context of manual updates, however, the specification explains that the updates are communicated into the system as opposed to the system being configured to update the UCI as claimed. Appx103 (15:53-67). The Board ignored that the system must be configured to update the UCI based on the provision of the multimedia streaming service not merely that the system is configured to accept updates to the UCI based on a user's manual input. The claims need not cover every disclosure in the specification. *SIMO Holdings Inc. v. Hong Kong uCloudlink Network Tech. Ltd.*, 983 F.3d 1367, 1378-79 (Fed. Cir. 2021).

The Board's construction also ignores the only expert testimony of record. Without any conflicting expert testimony, the Board rejected Dr. AlRegib's testimony that "a manual update to user preferences, through a user interface, is not the same as the system updating the user preferences based on provision of the media content streaming service." Appx34 (citing Appx3131-3132 (¶44)). Dr. AlRegib explained that a POSITA would have understood the claim to require that the system perform limitation 1f rather than the user's manual input because a manual update to UCI is not "based on the provision of the media content streaming service to the first computing device." Appx3131-3132 (¶44).

The Board's reliance on Lee's user interface is misplaced. Appx34. Lee discloses that the user can only manually update the user preferences in the user interface. Appx1131 (§2.1). Even if the interface could be considered part of the "media content streaming service," the updates are not based on providing the user interface but instead are based on the user's manual input. Appx3131-3132 (¶44).

b) Lee does not render obvious updating user preferences

Even under the Board's construction, Lee's user preferences cannot satisfy claim 1 because Lee does not disclose or render obvious updating the user preferences. Appx3048. Lee only discloses that users can set their preferences in a user interface when registering for the service. Appx1131 (§2.1); Appx1133 (§3.1); Appx32. Recognizing that Lee does not disclose updating user preferences,

the Board opines that "an ordinarily skilled artisan would have assumed that these preferences can be later changed" and concluded that "such an update would have been obvious." Appx32.

The Board's unsupported assumptions and conclusory obviousness statements do not provide the reasoned explanation necessary to support a finding of obviousness. *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1366 (Fed. Cir. 2016). The Board did not provide any motivation why it would have been obvious to a POSITA to modify Lee's system to provide for updates after registration or provide any explanation of the likelihood of success. Not only did the Board lack any supporting expert testimony but it ignored Avago's expert testimony that such a modification would not have been obvious. Appx3132-3134 (¶¶45-46).

2. Lee's usage history does not satisfy the disputed elements

The Board erred in concluding that Lee's usage history qualifies as UCI and satisfies disputed elements 1d, 1e, 1f, 1i, and 1j. Netflix and the Board relied heavily on a single clause in Lee while ignoring the context and failing to consider the TV-Anytime Specification that explains how Lee's system functions. Appx36.

a) Lee's usage history is not UCI

Lee's usage history is not UCI because it is not used for configuration. Without expert testimony, the Board extrapolated from Lee's reference to a

"recommended content list" and concluded that the usage history is used to configure content recommendations.

Lee's disclosure demonstrates that Lee's system does not provide recommendations based on usage history—the list of all content the user previously viewed—but instead provides recommendations based on user preferences and device information. Appx3137-3138 (¶53). Lee's title describes that the data streaming system is "Based on User Preference and Device Information." Appx1129. Lee's abstract further confirms that the home server is storing information such as "user preferences, device character information, the indication on the exact point the download was interrupted, and other related information." Appx1129. Lee's conclusion explains that "[t]he proposed system is also capable of sending highly customized content to different users or different device environments on a home network by storing/managing user preference information, device character information, and the content stop point on the home server." Appx1135 (§4). Notably absent from this list is usage history. Appx3054-3058 (identifying passages in Lee teaching that user preferences are the sole source of content recommendations).

Lee even confirms that recommendations based on viewing history are not possible. Lee explains that "[f]urther studies on determining the preferred content by automatically figuring out the user's preferences and device character information

are necessary." Appx1135 (§4). Given that Lee's system cannot automatically determine preferred content from user preferences and device character information (i.e., information entered by the user), a POSITA would recognize that Lee's system similarly cannot automatically determine preferred content from a user's usage history, which changes repeatedly as the user watches content. Appx3055; Appx3133-3134 (¶46).

Finding no support from Lee's express statements about how recommendations are made, the Board was forced to draw unsupported conclusions from a single sentence in Lee. Appx38. In finding that usage history is used to configure content recommendations, the Board relies on Lee's statement that "one is presented with a recommended content list created based on usage history, which is the information of the content the user has played through the streaming service and the details of the user profile." *Id.* (citing Appx1133 (§3.1)). When read in context, however, Lee's recommended content list is based on the content the user has played through the streaming service only insofar as it is based on what the user was last watching for which there is stop point information. Appx3980-3981; Appx4287-4288 (80:23-81:21).

The Board's conclusion is based on the flawed premise that usage history (i.e., what Netflix claims is a persistent log of what the user viewed) is stored in the User History DB. Appx42-43. In its only mention of the User History DB, Lee describes

that the "User History DB stores/manages content list and the timestamp of the user's most recent log-on to the server and received streaming." Appx1132 (§2.5). The timestamp is the stop point information saved to the database when a user stops streaming. Appx1134 (§3.8). Lee confirms this understanding by explaining that, upon log out, the server agent "receives stop point information and saves it in the database." *Id.* Thus, the User History DB only stores (1) the content list and (2) timestamp information. Lee's reference to usage history as the "content the user has played through the streaming service," is merely referencing the information stored in the User History DB, which is the information used to enable the stop point functionality, not a log of all content the user has viewed.

The Board lacks evidence to support its finding that the "content list" stored in the Usage History database is the list of all previously viewed content. Appx42. The Board incorrectly conflates the "recommended content list" with the "content list." The "content list" is defined and managed by Metadata and follows the schema defined in the TV-Anytime Specification, which is not part of the record. Appx3137-3138 (¶53). Indeed, the Board even found that the lists are different but still equated the two. Appx43 (n.22) ("we find that this 'content list' is not the same as the recommended content list provided to the user").

At most, usage history is used to index the user's preferences in Lee's Mapping Table. Appx1132 (§2.4.2). Such indexing does not provide any configuration

function. Lee explains that the Usage History DB stores and manages content lists and the timestamp of the user's most recent logon to the server and received streaming. *Id.* (§2.5). Lee describes that the server stores user preferences, device character information, and stop points. Appx1135 (§4). While that information can be put into separate tables, there is no evidence that Lee keeps a list of watched content and stores that information in the mapping table.

b) Lee's usage history is not retrieved, updated, or used to control provision of the multimedia content streaming service

Lee does not disclose that usage history is stored, so it cannot disclose that it is retrieved. There is no evidence supporting that the "content list" stored in the Usage History database is the list of previously viewed content. Appx42. The "content list" is defined and managed by Metadata and follows the schema defined in the TV-Anytime Specification, which is not part of the record. Appx3137-3138 (¶53). The Board's reasoning mistakenly conflates the recommended content list with the content list, but the Board even found that the lists are different. Appx43 (n.22).

Nor does Lee teach updating usage history. The Board's sole finding on updating usage history is that "Lee teaches 'updating' the usage history when content is stopped mid-playback." Appx37. Stopping content mid-playback is not usage history; it is a reference to stop points, which is a different form of alleged UCI.

Lee does not teach controlling provision of a media content streaming service based on usage history. The only process the usage history is used for is to provide the stop point as part of the streaming resuming request. Appx1134 (§3.6). If the user chooses to continue streaming, then the content restarts from the stop point. *Id.* (§3.9). But this is not controlling provision of the media content streaming service based on the usage history. Instead, the user's manual input controls the provision of the media streaming service. *Id.*

The Board mistakenly ignored Dr. AlRegib's testimony. Appx39. Even though Dr. AlRegib explained how Lee's context refutes Netflix's contentions, the Board substituted its own judgment to find that Dr. AlRegib's testimony contained "logical errors" and contradicted Lee's "express disclosure." *Id.* As explained in this section and the preceding section *supra*, Lee's context is necessary to understand the "express disclosure[s]," and the only expert testimony explaining the context was Dr. AlRegib's. It was error for the Board to minimize this testimony by impermissibly relying on its own understanding or experience.

c) Avago's arguments were timely

The Board incorrectly found that certain arguments Avago made regarding usage history were untimely. Appx39-40. The Federal Circuit, however, has explained that "[p]arties are not barred from elaborating on their arguments on issues previously raised." *Chamberlain Grp., Inc. v. One World Techs., Inc.*, 944 F.3d 919,

925 (Fed. Cir. 2019). A reply argument is proper if it "cites no new evidence and merely expands on a previously argued rationale." *Ericsson Inc. v. Intellectual Ventures I LLC*, 901 F.3d 1374, 1381 (Fed. Cir. 2018). Under the Board's rules, a sur-reply may respond to arguments raised in the corresponding reply. 37 C.F.R. §42.23.

Avago's arguments in its sur-reply expanded on its previously argued rationales and directly responded to arguments in Netflix's reply. Avago explained in its sur-reply why the heavily relied upon clause from Lee did not disclose content recommendations based on usage history. Appx3952-3998. Avago raised this argument in the patent owner response (and supporting expert declaration) and merely expanded upon it in response to Netflix's heavy reliance on the disclosure in its reply. *Id.*; compare *id.*, with Appx3006-3101, and Appx3102-3187.

In addition, Avago's contextual explanation of Lee's §3.1 directly responds to arguments Netflix raised in its reply. For example, Netflix argued that Avago "has no response [to §3.1], other than to pretend it does not exist." Appx3428-3429. Netflix also argued specific interpretations of that section, including that "Lee generates a recommended content list based on usage history and the user profile." Appx3429. Avago was entitled to respond to these arguments in its sur-reply. 37 C.F.R. §42.23.

Further, Netflix's arguments, in its reply, recognize that Avago raised arguments addressing §3.1 in its patent owner response. The following arguments recognize arguments Avago made in the patent owner response with respect to §3.1: "PO argues usage history is not used for anything" and "PO argues user preferences are the sole source of Lee's recommendations." Appx3429-3430; Appx3429 (n.6); Appx3435 (n.9). Avago was not barred from elaborating on these previously raised arguments. *Chamberlain*, 944 F.3d at 925.

3. Lee's stop points do not satisfy the disputed elements

The Board erred in finding that Lee's user conditions (stop points indicating the point where contact playback was stopped) satisfy disputed elements 1e, 1f, or 1j. Lee does not disclose or render obvious controlling provision of the media content streaming service based on stop points.

a) Lee does not control provision of the media content streaming service based on the stop points

Provision of the multimedia content streaming service is not based on the stop points but is instead based on the user input. The user must decide whether to resume viewing content from the previous stop points. Appx3146-3148 (¶68); Appx1134 (§3.9). The user is presented with a pop-up window and must select "consecutive playing" if the user chooses to resume viewing from the stop point. *Id.* Thus, it is the user's decision and selection to continue viewing content that controls provision

of the multimedia content streaming service, not the system's use of stop points. Appx3146-3148 (¶68).

The Board's argument that the server controls provision misses the mark. Appx47-48. Provision of the multimedia content service is not based on the stop point; it is based on the user's manual selection to continue viewing, which does not satisfy the plain claim language. Appx1134 (§3.9). As described in Section II.C.1.a *supra*, claim 1 requires a system configured to update the UCI based on provision of the media content streaming service. Appx103 (15:53-67). This requirement means that the *system* uses the provision of the multimedia content streaming service to update the UCI. Appx3131-3132 (¶44). The claim does not encompass manual updates to UCI because it is the system that must be updating the UCI and because the update must be based on provision of the multimedia content streaming service. *Id.*

b) Lee's stop points are not updated

Lee's stop points can only control provision of the media content streaming service if they are updated. The first time a user watches a show, there is no content stop point saved, so in this instance, the nonexistent content stop point necessarily cannot control provision of the media content streaming service. Appx3059; Appx3144-3145 (¶66). Thus, the stop points must be updated for the service to be

able to control provision of the media content streaming service based on the stop points. *Id.*

Lee, however, does not disclose updating the stop points. The Board even recognized that Lee lacks such a disclosure. Appx47. The Board concluded without expert testimony that a POSITA would have understood Lee to suggest updating the stop points. Appx46-47. The Board offered no obvious analysis or rationale to explain why such a modification would have been obvious to modify Lee in the manner suggested. Appx46-47. The Board's unsupported assumptions and conclusory obviousness statements do not provide the reasoned explanation necessary to support a finding of obviousness. *Arendi*, 832 F.3d at 1366.

4. Lee's client device information does not satisfy the disputed elements

The Board erred in finding that Lee's client device information qualifies as UCI and satisfies disputed element 1d, 1e, 1f, 1i, and 1j. Client device information is not UCI and is not updated by the provisioning of media content.

a) Client device information is not UCI

Lee's client device information is not user configuration information because it relates to clients, not users. Lee consistently distinguishes between "users" (people using the system) and "clients" (hardware devices on which users consume media content). Appx1130-1131. Client device information is managed by the Device Info Manager, which "determines the client device information such as media codec,

CPU capability, display size, and other such factors from the media player codec or devices' system information." Appx1131 (§2.2.2). The client device information does not depend on the user but is the same regardless of which user is operating the device.

The Board committed legal error by broadening UCI to encompass client device information not related to a user. Appx17; Appx52. The Board's broad construction finds no support in the record. The claim term itself is *user* configuration information, which necessarily requires that the information is for a user. The specification explains that UCI includes "information pertaining to device configuration and/or operational preferences *specific to the device user* and/or various use settings, network connectivity, service access, secure access information, network and service access information and/or preferences that are *unique to particular users*, and/or manner of use of available resources." Appx99 (7:49-60). Avago's expert explained that, "device configuration information that relates to no particular user[] is not UCI[] as that term is used in the Challenged Claims." Appx3122-3123 (¶35). The Board's interpretation that UCI covers device information that is the same regardless of the user is legal error and should be reversed.

b) Client device information is not updated

Even if client device information qualifies as UCI, Lee does not teach updating the client device information based on provision of the media content streaming service. Appx3071. As discussed above, claim 1 requires that the system updates UCI (in this case, client device information) based on use of the system. Lee, in contrast, does not teach that client device information is updated by the provisioning of media content. As shown in Figure 5, upon login, the client provides client device information to the home server. Appx1133. Indeed, the Board found that the client device sends its information each time it connects to the server. Appx51. The Board also found, without expert testimony, that an ordinarily skilled artisan would have understood this disclosure to mean that Lee updates the client device information at least when a new device is used or when a previously-used device's information has changed. *Id.*

This finding, however, does not satisfy the claim language requiring that the update is "based on provision of the media content streaming service." At most, Lee teaches that client device information is changed by a user by changing the device and transmitted to the server upon login. Appx1131 (§2.1). Lee does not disclose that any aspect of the provision of the media content streaming service results in an update to client device information. Appx3157-3158 (¶81). Lee's client device information is updated by Lee's system at login, before Lee's system identifies the

user, retrieves any UCI, or provides any media content streaming service. *Id.* Because the client device information is only transmitted at login, it cannot be updated based on provision of the multimedia content streaming service. Appx3155-3156 (¶80).

The plain language of the claim further demonstrates the Board's error. According to the structure of the claim, provision of the media content service is controlled based on the UCI (element 1[e]), and the UCI cannot be retrieved until the user has logged in (elements 1[b]-1[d]). Appx3157-3158 (¶81). Under the Board's finding, the alleged UCI (client device information) is updated at login (element 1[b]), before provision of any media content streaming service (element 1[e]). Thus, the client device information cannot be updated based on provision of the media content streaming service, as claimed, because it is updated before the provision of the media content streaming service has begun.

c) Avago's arguments were timely

The Board incorrectly found that Avago's arguments in the sur-reply were untimely. Appx55-56. Avago presented arguments in its sur-reply that expanded on its arguments that the client device information could not satisfy the plain language of the claims. Appx3952-3998. These arguments merely expanded on those raised in the patent owner response in which Avago explained that antecedent basis requires that the UCI identified in limitation 1[d] must be the same for the

remaining limitations and that client device information cannot satisfy this requirement. Appx3990-3991; *compare id.*, with Appx3045-3048 ("under the principle of antecedent basis, the same UCI must satisfy each of these limitations"), and Appx3070-3071 ("this interpretation cannot be squared with the claim language itself").

D. The Board erred in finding that Lee renders obvious claim 6

Claim 6 recites, "at least one of the plurality of computing devices is configured to dynamically develop the user configuration information corresponding to the first user based on the provision of the media content streaming service to the first computing device." Appx103 (16:34-39). The Board erred in finding that Lee discloses the elements of claim 6.

1. Lee does not disclose dynamically developing UCI under the correct construction

The Board committed legal error by reading out the term "dynamically" from the claims. To "dynamically develop" the UCI based on provision of the media content streaming service as claimed, the system must be configured to continuously change the UCI based on provision of the media content streaming service. This understanding is the plain meaning of "dynamic." Appx3376; Appx3382; Appx3386. The only expert testimony regarding the meaning of the term dynamic explained that a POSITA would understand "dynamic" to mean continuously

changing and that recording changes after provision of the content has stopped is not dynamic. Appx3166 (¶98).

Even assuming that Lee discloses the limitations of claim 1 (it does not), the Board did not identify any disclosure in Lee that describes continuously changing any alleged UCI based on provision of the media content streaming service. In analyzing claim 6, the Board referenced its discussions about usage history and stop points, in the context of claim 1, but did not make any further findings with respect to the term, "dynamically develop." Appx61. The Board did not interpret dependent claim 6 as requiring anything more than claim 1. This is error. 35 U.S.C. §112(d) ("a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed"); *Am. Piledriving Equip., Inc. v. Geoquip, Inc.*, 637 F.3d 1324, 1335 (Fed. Cir. 2011) ("[W]here, as here, the claims describe the same relationship using different terms, the assumption is that the term in the dependent claim has a narrower scope.").

The Board's description of updating stop points and usage history further demonstrates that the updates are not dynamic. Regarding stop points, the Board's finding that Lee discloses "updating a prior stop point when a user resumes previously played content before stopping playback" is not supported by substantial evidence. Appx46. Instead, Lee discloses only that the changes to the stop point are recorded after provision of the content has stopped. Appx3079. Specifically, Lee

discloses that after it receives "the request to stop/quit the data streaming to Media Player 1, the Pumping Server is stopped by a stop/quit event and sends the stop point to the Server . . . to store and manage." Appx1134 (§3.6). The Board cited no other disclosure in Lee or expert testimony that contradicts Lee's express disclosure that provision of the streaming service is stopped before the stop point information is stored in the database. Appx3079; Appx3166 (¶98). Such an after-the-fact update cannot be UCI dynamically developed based on provision of the media content streaming service. *Id.*

Regarding usage history, the Board found that usage history is updated "when content is stopped mid-playback." Appx37. For the same reasons that Lee's stop points do not satisfy the requirements of claim 6, Lee's usage history does not satisfy the requirements of claim 6.

2. Lee does not disclose dynamically developing UCI under the Board's construction

The Board's finding that Lee discloses dynamically developing UCI lacks substantial evidence even under the Board's construction of "dynamically develop." The Board found that only Lee's usage history and stop points satisfy this claim. Appx61. For the reasons discussed above, neither Lee's usage history nor stop points are updated at all, let alone automatically updated.

Not only are the Board's findings not supported by any expert testimony, but the Board compounded its error by disregarding Avago's expert testimony. Appx62.

The Board did "not credit [Dr. AlRegib's] testimony because Dr. AlRegib [did] not discuss matters within his technical expertise. *Id.*; Appx3164-3166 (¶¶94-98). Dr. AlRegib's testimony, however, is squarely within his expertise. Dr. AlRegib's testimony, in paragraph 95, discussed how the "alleged UCI cited by [Netflix] is not updated at all, let alone automatically updated," incorporating his earlier testimony on this issue. Appx3165 (incorporating Appx3131-3134 and Appx3155-3162). Dr. AlRegib's testimony, in paragraphs 96 through 98, discussed his interpretation of the term, "dynamically," and how dictionary definitions supported his interpretation of how that term is used in the context of the technology disclosed in the '938 Patent. Such testimony is within Dr. AlRegib's technical expertise, and it was error for the Board not to consider it. *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 332 (2015) ("[e]xperts may be examined to explain terms of art, and the state of the art, at any given time").

E. The Board erred in finding that Lee renders obvious claims 17 and 18

In finding that Lee renders obvious claims 17 and 18, the Board erred by rewriting the claim language. The Board found that the element, "at least one of the plurality of computing devices is configured to control provision of the media content streaming service to the first computing device and the second computing device from a server remote from the system," only required that "Lee's home server controls provision of the service to client 1 and client 2, and at least some portion of

the service (namely, content) comes from a remote server." Appx66; Appx69. This interpretation cannot be squared with the plain language of the claim.

The Board's findings on claims 17 and 18 should be reviewed de novo because the parties' dispute relates to claim scope with respect to "control provision of the media content streaming service . . . from a server remote from the system." Even under a substantial evidence review, the Board's determination is erroneous.

The Board's factual findings regarding Lee's disclosure were undisputed. Appx68. The Board found that Lee's "external server is the source of the multimedia content that is ultimately streamed to the client devices." *Id.* The Board correctly found that "Lee's home server acquires content from the external server." *Id.* Critically, the Board found that "the home server controls provisioning of the service by providing a recommended list of content and streaming content to the client devices using that list." *Id.*

Lee's system, however, cannot satisfy the claim limitations. Claim 18 requires that "at least one of the plurality of computing devices is configured to control provision of the media content streaming service *to the first computing device* and the second computing device *from a server remote from the system.*" Appx104 (17:47-53) (emphasis added). That is, the provision of the media content streaming service must be received at the first computing device from the remote server. *Id.*;

Appx3086; Appx4296 (89:14-24). The Board found that the home server, not the remote server, controls provision of the service to the client devices. Appx68.

The plain language of claims 17 and 18 contradicts the Board's contention that "the claim does not preclude content being cached on Lee's home server after it is received from the external server and before it is provided to the client devices." Appx70. The plain meaning of "configured to control provision of the media content streaming service to the first computing device . . . from a server remote from the system," requires the remote server to provide the media content streaming service to the first computing device. The claim identifies the sender (the remote server) and the recipient (the first computing device).

The Board wrongly found that "claims 17 and 18 do not use antecedent basis to indicate that the control referenced in these claims is the same as the control recited in claim 1." Appx69 (n.29). Claim 1 recites "a plurality of computing devices . . . configured to . . . control provision of a media content streaming service to a first computing device." Appx103 (15:53-63). Claim 18 further limits this claim 1 recitation by requiring that "at least one of the plurality of computing devices is configured to control provision of the media content streaming service to the first computing device and the second computing device from a server remote from the system." Appx104 (17:47-53). Thus, the controlling provision in claim 18 is the same controlling provision referenced in claim 1. This claim 18 recitation cannot be

satisfied by the home server controlling provision of the media content to the computing devices, as taught by Lee.

Claims 17 and 18 are similar to the claims in *Apple Inc. v. MPH Technologies Oy*, 28 F.4th 254, 261 (Fed. Cir. 2022). In *Apple*, the disputed claim recited "intermediate computer configured to receive from a mobile computer a secure message sent to the first network address." *Id.* The Federal Circuit held that the plain meaning of this term requires the mobile computer to send the message to the first network address, not merely that the first network address ultimately receives the message. *Id.* The Federal Circuit explained that "[t]he proximity of the concepts links them together, such that a natural reading of the phrase conveys the mobile computer sends the secure message *to* the first network address." *Id.* (emphasis in original).

Here, like *Apple*, the proximity of the terms "to" and "from" in claims 17 and 18 links them together such that the natural reading of the phrase conveys that the server remote from the system provides the media content streaming service to the first computing device. The plain language establishes provision from the remote server, not provision from the home server. Appx3173 (¶113).

For Lee to satisfy these claims, it must disclose first and second computing devices receiving provision of the service from the remote server, not just from the home server. Appx3086. Lee teaches nothing of the sort. Lee teaches that, in the

disclosed system, all content is provided from the home server itself (not any external server) to the clients. *Id.*; Appx1129; Appx3173-3174 (¶114).

Indeed, the use of the home server as the streaming platform is the entire purpose of Lee's proposed system. Appx3174-3178 (¶115). Lee identifies a problem that "most users do not have fast enough connections to quickly download multimedia data." Appx1130 (§1). To solve this problem, Lee proposes the system of Figure 1, in which all content (including content received from an external server) is first stored on the home server, and then streamed from the home server to the clients. Appx3174-3178 (¶115). Figure 1 illustrates this solution in which the only device with a connection to an external server (separated from the home network by the annotated vertical line in the figure reproduced above) is the home server itself. *Id.* This provision from the home server does not satisfy the plain language of the claims.

F. The Board erred in finding that Lee and Smith render obvious claims 12, 16, 26, and 29

The Board's finding that it would have been obvious to modify Lee in view of Smith to arrive at the inventions of claims 12, 16, 26, and 29 is not supported by substantial evidence. Appx76-85. The Board erred by construing the complex Smith reference and concluding, contrary to the only expert testimony of record, that a POSITA would have been motivated to modify Lee in light of Smith.

Claim 12 requires that "at least one of the plurality of computing devices is configured to control provision of the media content streaming service to the first computing device and the second computing device *by selecting a version of content, from a plurality of stored versions of content, to be streamed* to the first computing device or the second computing device *based on the information identifying content reproduction capabilities* corresponding to the first computing device or the second computing device." Appx104 (17:4-14) (emphasis added). Claims 16, 26, and 29 contain similar limitations requiring selecting a version of content, from a plurality of stored versions of content, to be streamed to the first device. The Board acknowledged that "Lee does not teach selecting a version of content for streaming from a plurality of stored versions." Appx79. The Board instead relied on Smith to teach this limitation, finding, without expert testimony, that a POSITA would have found it obvious to combine Lee with Smith's teachings of "pre-materializ[ing] alternate versions of the Internet content" to store alternate versions of content on Lee's home server. Appx76.

To prove a claimed invention obvious, however, "it is not enough to simply show that the [prior art] references disclose the claim limitations." *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Contractors USA, Inc.*, 617 F.3d 1296, 1303-04 (Fed. Cir. 2010). The Board must also show that a skilled artisan "would have been motivated to combine the prior art" to achieve the claimed invention with

"a reasonable expectation of success in doing so." *Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 991 (Fed. Cir. 2017). This includes "identify[ing] a *reason* that would have prompted" a skilled artisan "to combine the elements in the way the claimed [] invention does." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). The Board's review of the prior art—supported only by attorney argument—lacks substantial evidence to support its conclusion that a POSITA would have been motivated to combine the elements as claimed.

First, as Avago's expert explained, adopting Smith's pre-materialization mode would run counter to Smith's preferred mode of operation. Appx3183 (¶124). "[E]ven if a reference is not found to teach away, its statements regarding preferences are relevant to a finding regarding whether a skilled artisan would be motivated to combine that reference with another reference." *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1069 (Fed. Cir. 2018); *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1051 n.15 (Fed. Cir. 2016) (en banc). Smith's preferred mode of operation is to transcode content dynamically in real-time. Appx3096; Appx3183 (¶124). Smith "propose[s] that the transcoding system utilizes a policy engine to evaluate the alternatives for adapting the content to the client devices." *Id.*; Appx1377 (§4). The policy engine gathers capabilities of the client and senses the network conditions to define the transcoding options for the client. *Id.* (§4.1).

In fact, Avago's expert explained that Smith's pre-materialization mode nullifies many of the advantages of Smith. Appx3183-3184 (¶125); Appx3096. Smith teaches that the system should "optimize the selection of the content alternatives" based on a number of factors, including different target modalities and fidelities, data sizes, and maximum data sizes "derived from the user's specified maximum loadtime and the network conditions." *Id.*; Appx1377-1378 (§4.2). The "benefits of such optimization largely would be lost in an implementation" that pre-materialized the alternate versions of content "because the disclosed optimization is necessarily multi-factorial and depends on multiple real-time conditions." Appx3183-3184 (¶125); Appx3096-3097. Modifying Lee to incorporate Smith's pre-materialization would eliminate Smith's benefits. *See Polaris*, 882 F.3d at 1069.

Second, the structure of Lee's system demonstrates that a POSITA would not have been motivated to adopt Smith's pre-materialization. Appx3097. In a home-server based network such as Lee's, different clients (e.g., a TV, a tablet, a phone, a PC) might all have quite different capabilities. *Id.*; Appx3184 (¶126). To pre-materialize optimized alternative versions, the home server would have to store different versions of each piece of content (e.g., a movie, song, etc.). *Id.* A POSITA would have recognized that in a home-server based system, storage is limited, while client load is generally low (with rarely more than a few users consuming content simultaneously). Appx3184-3185 (¶127).

The Board set aside Avago's expert testimony and responded to Avago's arguments with the red herring argument that claim 12 does not require that all versions of content be stored on Lee's home server or that content to be streamed always be selected from the stored versions. Appx82. Even if the Board's reading of claim 12 is correct, a POSITA would still not be motivated to modify Lee to adopt Smith's prematerialization mode given the storage and bandwidth constraints of Lee's system in light of Smith's solution that provides dynamic, real-time transcoding. Appx3184-3185 (¶127).

The Board's suggestion that the inferior combination still supports Netflix's rationale is not the correct analysis. Appx83. "[O]bviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make*" the modifications necessary. *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (emphasis in original). "The benefits, *both lost and gained*, should be weighed against one another." *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019) (citation omitted) (emphasis in original). The weighing of tradeoffs "is consistent with the longstanding principle that the prior art must be considered for all its teachings, not selectively." *Id.* The Board lacks any analysis of the tradeoffs associated with adopting Smith's pre-materialization. Instead, the Board concludes, based on attorney argument alone, that a POSITA would have been motivated. The Board's conclusion is despite the only expert testimony of record

explaining the many reasons why a POSITA would not have been motivated to modify Lee as Netflix alleges. Appx3182-3186 (¶¶123-130). The Board's reliance on Netflix's attorney argument despite contrary expert testimony does not rise to the level of substantial evidence.

CONCLUSION

For these reasons, the Board's determination that claims 1-29 are unpatentable should be reversed or, at a minimum, vacated and remanded.

Respectfully submitted,

/s/ Daniel S. Young
Daniel S. Young
QUARLES & BRADY LLP
8210 Southpark Terrace
Littleton, CO 80120
(303) 268-0066 (telephone)
(833) 793-0703 (facsimile)
Email: dyoung@quarles.com

*Counsel for Appellant
Avago Technologies International
Sales Pte. Limited.*

Addendum

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Trials@uspto.gov
Tel: 571-272-7822

Paper 44
Date: February 6, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NETFLIX, INC.,
Petitioner,

v.

AVAGO TECHNOLOGIES INTERNATIONAL SALES PTE. LIMITED,
Patent Owner.

IPR2021-01298¹
Patent 10,911,938 B2

Before KRISTEN L. DROESCH, NATHAN A. ENGELS, and
JULIET MITCHELL DIRBA, *Administrative Patent Judges*.

DIRBA, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining Some Challenged Claims Unpatentable
35 U.S.C. § 318(a)

¹ IPR2021-01334 and IPR2021-01335 have been consolidated with the instant proceeding.

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In this *inter partes* review, Netflix, Inc.² (“Petitioner”) challenges the patentability of all thirty claims of U.S. Patent No. 10,911,938 B2 (Ex. 1001, “the ’938 patent”), which is assigned to Avago Technologies International Sales Pte. Ltd (“Patent Owner”). For the reasons explained below, Petitioner has shown that claims 1–29 of the ’938 patent are unpatentable, and it has not shown that claim 30 of the ’938 patent is unpatentable.

I. BACKGROUND

A. History of this Proceeding

This is a consolidated proceeding. In July and August of 2021, Petitioner filed three petitions requesting *inter partes* review of the ’938 patent: in IPR2021-01298, Petitioner challenged claims 1, 2, 6–9, 17–20, 22, 23, 25, and 30 (Paper 2 (“Pet.”)); in IPR2021-01334, Petitioner challenged claims 3–5, 21, 24, 27, and 28 (Paper 18 (“1334-Pet.”)); and in IPR2021-01335, Petitioner challenged claims 10–16, 26, and 29 (Paper 19 (“1335-Pet.”)).³ In support of each petition, Petitioner submitted a corresponding declaration from Stephen Gray. *See* Ex. 1003 (declaration from the 1298 IPR); Ex. 1030 (declaration from the 1334 IPR), Ex. 1031 (declaration from the 1335 IPR). After reviewing the preliminary record in each proceeding, we determined that Petitioner had demonstrated a reasonable likelihood that it would prevail in establishing the unpatentability

² Petitioner also identifies Netflix Streaming Services, Inc. as a real party-in-interest. Pet. 76.

³ We refer to these proceedings as “the 1298 IPR,” “the 1334 IPR,” and “the 1335 IPR,” respectively. In this Decision, we use prefixes “1334” and “1335” to denote papers originally filed in the 1334 IPR and 1335 IPR, respectively. We do not use a prefix for papers filed in the 1298 IPR.

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of at least one claim challenged in that proceeding, and we instituted the requested *inter partes* reviews. *See* Paper 14 (“Inst. Dec.”); *Netflix, Inc. v. Avago Techs. Int’l Sales Pte. Ltd.*, IPR2021-01334, Paper 15 (“1334-Dec.”); *Netflix, Inc. v. Avago Techs. Int’l Sales Pte. Ltd.*, IPR2021-01335, Paper 14 (“1335-Dec.”). After institution, we consolidated the 1334 and 1335 IPRs with this proceeding (the 1298 IPR), terminated the 1334 and 1335 IPRs, and ordered the parties to supplement the record of this proceeding with the petitions and necessary exhibits from the 1334 and 1335 IPRs. Paper 16 (Consolidation Order).

During trial, Patent Owner filed a Response (Paper 23, “PO Resp.”), and in support, Patent Owner submitted testimony from Ghassan AlRegib (*see* Ex. 2018). Petitioner then filed a Reply (Paper 31, “Pet. Reply”), which cited an additional declaration from Mr. Gray (*see* Ex. 1039). Finally, Patent Owner filed a Sur-reply (Paper 32, “PO Sur-reply”). In addition, Patent Owner deposed Mr. Gray and filed the corresponding transcripts (*see* Exs. 2019–2020), and Petitioner deposed Dr. AlRegib and filed the corresponding transcripts (*see* Exs. 1041–1042).

With our authorization (Paper 36), Petitioner filed a table identifying arguments in Patent Owner’s Sur-reply that are allegedly untimely (Paper 38), and Patent Owner responded (Paper 39). For the reasons explained below, we agree with Petitioner that the Sur-reply includes untimely new arguments, but we determine that those arguments would not have been persuasive even if they had been properly raised. *See infra* § II.E.1.b.ii (addressing Lee’s usage history).

An oral hearing in this proceeding was held on November 10, 2022, and a transcript of the hearing is included in the record. Paper 43 (“Tr.”).

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Petitioner objected to slides 46–51 of Patent Owner’s demonstratives (Paper 42), but we dismiss those objections as moot (*see infra* Part III).

B. Related Matters

The parties indicate that the ’938 patent has been asserted in two district court lawsuits: *CA, Inc. v. Netflix, Inc.*, 2:21-cv-00080 (E.D. Tex.) and *Netflix, Inc. v. CA, Inc.*, 3:21-cv-3649 (N.D. Cal.). Pet. 76; Paper 6 (Patent Owner Mandatory Notices), 1. As noted above, IPR2021-01334 and IPR2021-01335 challenged the same patent and have been consolidated with this proceeding. The parties identify no other related proceedings.

C. The Grounds

We instituted trial on the following grounds of unpatentability:

Claim(s) Challenged	35 U.S.C. §⁴	Reference(s)/Basis
1–4, 6–9, 17–25, 27, 28, 30	102(a)	Lee ⁵
1–4, 6–11, 13–15, 17–25, 27, 28, 30	103(a)	Lee
5	103(a)	Lee, Glance ⁶
10–16, 26, 29	103(a)	Lee, Smith ⁷

⁴ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), revised 35 U.S.C. §§ 102, 103 effective March 16, 2013. We refer to the pre-AIA versions of §§ 102 and 103, but our findings would be the same if we had applied the current versions of these statutes.

⁵ Lee, Yun-Ju, et al., “Development of a Seamless Data Streaming System Based on User Preference and Device Information.” *SERA ’06: Fourth International Conference on Software Engineering Research, Management and Applications* (IEEE 2006) (Ex. 1004). We are persuaded that Lee qualifies as prior art. *See* Ex. 1004, 1; Ex. 1015 ¶¶ 8–11 (*cited in* Pet. 10).

⁶ US 6,947,922 B1, issued September 20, 2005 (Ex. 1016).

⁷ Smith, John R., et al., “Transcoding Internet Content for Heterogeneous Client Devices.” *ISCAS ’98: Proceedings of the 1998 IEEE International*

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See Inst. Dec. 3; 1334-Dec. 4; 1335-Dec. 4.

D. Summary of the '938 Patent

The '938 patent is titled “Method and System for a Networked Self-Configuring Communication Device Utilizing User Preference Information,” and the application that led to this patent was filed on March 30, 2020, claiming the benefit of a provisional filed on June 12, 2007. Ex. 1001, codes (22), (54), (60), (63).

Figure 1A (reproduced below) shows an exemplary system according to an embodiment of the invention. Ex. 1001, 3:49–51.

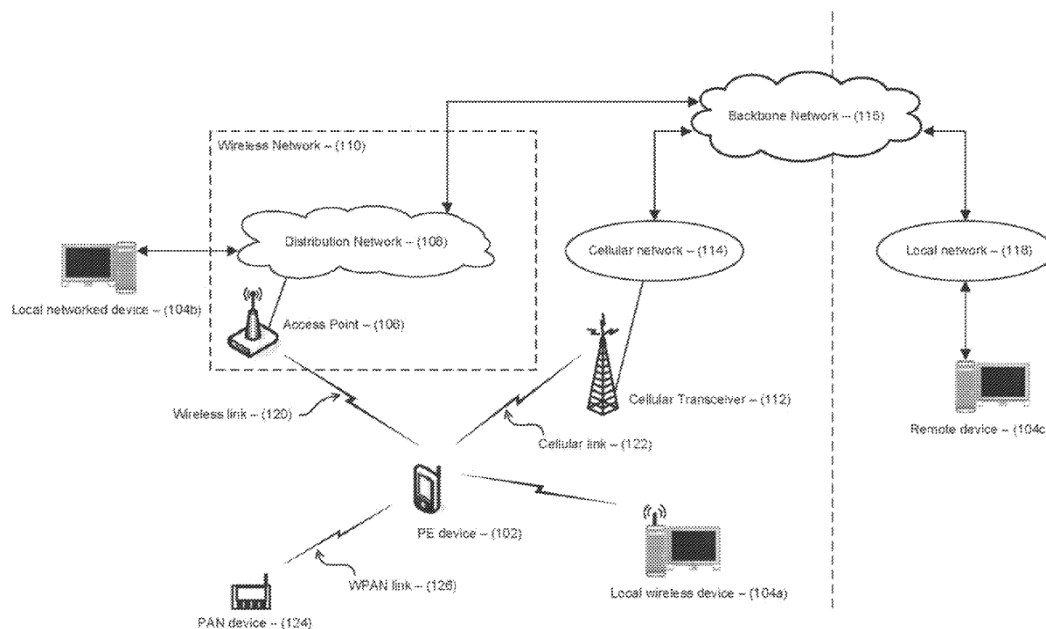


FIG. 1A

Symposium on Circuits and Systems (IEEE 1998) (Ex. 1017). We are persuaded that Smith qualifies as prior art. See Ex. 1017, 1; Ex. 1018 ¶¶ 8–11 (*cited in* 1335-Pet. 12).

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As shown above, Figure 1A includes “a personal electronic (PE) device 102, a local wireless device 104a, a local networked device 104b, a remote device 104c, and an access point 106.” Ex. 1001, 3:51–54. This figure also includes several networks (108, 110, 112, 114, 116, 118) that connect these components. *Id.* at 3:55–60. The Specification states: PE device 102 may be “a [s]martphone, a cellphone, a PDA, [or] a multimedia device” (*id.* at 4:9–15); local wireless device 104a may be “a high-definition television (HDTV) set, a dedicated audio system, and/or a digital video player device” (*id.* at 5:1–5); local networked device 104b may be “a personal computer (PC), a printer, scanner, and/or fax device” (*id.* at 5:28–31); and remote device 104c may be substantially similar to local devices 104a and 104b (*id.* at 5:32–35).

The ’938 patent states that a first PE device may generate, update, and/or store “user configuration information” (*e.g.*, Ex. 1001, 3:31–33, code (57)), and a second PE device may download that user configuration information and configure itself using that information (*e.g.*, *id.* at 3:42–48, code (57)). “The user configuration information may comprise information pertaining to device configuration and/or operational preferences specific to the device user and/or various use settings, connectivity, and/or use of available resources.” *Id.* at code (57). It can also include other information:

The user configuration information may comprise, for example, information pertaining to device configuration and/or operational preferences specific to the device user and/or various use settings, network connectivity, service access, secure access information, network and service access information and/or preferences that are unique to particular users, and/or manner of use of available resources. For example, the user configuration information may specify various user specific device operational preferences, comprising

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favorite broadcast channels and/or website, favorite games, game status information, and media consumption settings. Exemplary media consumption settings may comprise file types and/or video or audio presentation preferences, website access information, user interface configuration preferences, and/or directory information. The user configuration information may also specify particular devices, for example, the remote device 104c, which may be accessed to perform certain type of operations and/or to store and retrieve specific category of data.

Id. at 7:49–67.

E. Challenged Claims

All claims of the '938 patent (i.e., claims 1–30) are challenged in this consolidated proceeding. Of these, claims 1, 23, 27, and 30 are independent. Independent claim 1 is illustrative:

1. [1pre] A system comprising:
 - [1a] a plurality of computing devices connected via one or more networks,
 - [1b] wherein the system is configured to receive login information corresponding to a first user;
 - [1c] identify the first user based on the login information;
 - [1d] retrieve user configuration information corresponding to the first user;
 - [1e] control provision of a media content streaming service to a first computing device of the plurality of computing devices based on the user configuration information corresponding to the first user;
 - [1f] update the user configuration information corresponding to the first user based on the provision of the media content streaming service to the first computing device;
 - [1g] receive login information corresponding to the first user from a second computing device of the plurality of computing devices;

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[1h] identify the first user based on the login information received from the second computing device;

[1i] retrieve the updated user configuration information corresponding to the first user; and

[1j] control provision of the media content streaming service to the second computing device based on the updated user configuration information corresponding to the first user.

Ex. 1001, 15:53–16:11 (references added in brackets).

II. ANALYSIS

A. Legal Standards

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are “such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The legal question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of obviousness or nonobviousness.⁸ *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966). One seeking to establish obviousness based on more than one reference also must articulate sufficient reasoning with rational underpinnings to combine teachings. *See KSR*, 550 U.S. at 418.

⁸ The record does not include allegations or evidence of objective indicia of obviousness or nonobviousness.

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In an *inter partes* review, the petitioner has the burden of proving unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e). That burden never shifts to the patentee. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

We implement procedures to facilitate a just, speedy, and inexpensive resolution of the proceeding (*see* 37 C.F.R. § 42.1(b)), and to that end, we place limitations on the contents of reply and sur-reply briefs and the parties’ oral hearing presentations. Any arguments presented in the Reply or Sur-reply that are not fairly responsive to arguments raised in the preceding merits brief are untimely and forfeited. *See id.* § 42.23(b) (limiting scope of replies and sur-replies); Trial Practice Guide⁹ 73–74 (explaining that “replies and sur-replies can help crystalize issues for decision” but cannot “proceed in a new direction with a new approach” or belatedly raise new issues or evidence); *see also* Trial Practice Guide 73 (explaining that a petitioner “may not submit new evidence or argument in reply that it could have presented earlier, e.g. to make out a prima facie case of unpatentability”). Similarly, any arguments for patentability that Patent Owner did not raise in the Response are forfeited. *See* Paper 15 (Scheduling Order), 9 (cautioning Patent Owner that “any arguments not raised in the response may be deemed waived”);¹⁰ Trial Practice Guide 52; *see also In re NuVasive, Inc.*, 842 F.3d 1376, 1380–82 (Fed. Cir. 2016) (holding that argument raised in the

⁹ PTAB Consolidated Trial Practice Guide (Nov. 2019), *available at* <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

¹⁰ *See In re Google Tech. Holdings LLC*, 980 F.3d 858, 862–63 & n.8 (Fed. Cir. 2020) (explaining that “forfeiture is the failure to make the timely assertion of a right” and noting that the court and parties have sometimes used the term “waiver” when applying the doctrine of forfeiture).

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preliminary response but not raised in a patent owner response was waived). We limited the parties' oral hearing presentations to arguments made in their briefs. Paper 37 (Order Setting Argument), 2–3; Tr. 4:16–18; *see* Trial Practice Guide 85–86. Any new arguments raised at oral hearing are untimely and also forfeited. *See also Dell Inc. v. Acceleron, LLC*, 818 F.3d 1293, 1301 (Fed. Cir. 2016) (holding Board erred by relying on argument first presented at oral hearing).

B. The Level of Ordinary Skill in the Art

1. Adopted Level of Skill

Our reviewing court has explained that “the level of skill in the art is a prism or lens through which a judge, jury, or the Board views the prior art and the claimed invention.” *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (citing *Al-Site Corp. v. VSI International, Inc.*, 174 F.3d 1308, 1324 (Fed. Cir. 1999)). “This reference point prevents these factfinders from using their own insight or, worse yet, hindsight, to gauge obviousness.” *Id.*

Petitioner asserts that the level of ordinary skill in the art corresponds to: (1) “a bachelor’s degree in computer science, electrical engineering, or [a] similar field” and “three years of experience in networked communication devices,” or (2) “a master’s degree in electrical engineering, computer science, or a similar field with an emphasis in networked communication devices.” Pet. 14 (citing Ex. 1003 ¶¶ 49–51). For purposes of the Institution Decision, we adopted Petitioner’s proposal. Inst. Dec. 7.¹¹

¹¹ Unless otherwise noted, the 1334-Petition, the 1335-Petition, the 1334-Institution Decision, and/or the 1335-Institution Decision include

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Patent Owner largely agrees with Petitioner’s definition, but submits that an ordinarily skilled artisan would have had experience in “streaming content” rather than “networked communications.” PO Resp. 19 (citing Ex. 2018 ¶ 22). According to Patent Owner, Petitioner “disregards the import of the claims, which unquestionably are directed to the use of [user configuration information] to control provision of streaming content services rather than any particular networking protocols or technology.” *Id.* at 20. Patent Owner explains that the distinction is important because Petitioner’s expert, Mr. Gray, has less than three years of experience with streaming content. *Id.*; *see also* Tr. 49:16–24.

Petitioner responds that “[t]he field of the ’938 patent is networked communication devices.” Pet. Reply 34 (citing Ex. 1001, 1:57–61). Petitioner submits that Patent Owner fails to identify any support in the Specification for limiting the field to streaming content, and Petitioner contends that the Specification contains only two passing references to streaming. *Id.* (citing Ex. 1001, 5:34, 6:51). Patent Owner did not respond to these arguments. *See* PO Sur-reply 35–36.

Having considered the parties’ arguments and the evidence of record, we agree with Petitioner’s proposal and determine that the level of ordinary skill in the art corresponds to: (1) a bachelor’s degree in computer science, electrical engineering, or a similar field and three years of experience with networked communication devices, or (2) a master’s degree in electrical engineering, computer science, or a similar field with an emphasis in networked communication devices. *Accord* Inst. Dec. 7. We are persuaded

substantially the same contentions, analysis, and/or determinations as the Petition and the Institution Decision in the 1298 IPR.

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that this definition comports with the level of skill necessary to understand and implement the teachings of the '938 patent.¹² The Specification of the '938 patent specifically states that the field of the invention relates to networked communication devices (Ex. 1001, 1:57–61), and it describes the networks connecting those devices (*e.g.*, *id.* at 1:65–2:52, 5:50–7:40). As Petitioner notes (*see* Pet. Reply 34), the Specification includes only a few passing references to streaming. *See* Ex. 1001, 2:39–41 (noting that cellular services include features such as “video streaming”), 5:29–35 (noting that local service resource 104a may provide multimedia streaming to PE device 102), 6:47–51 (similar). As a result, we do not agree that an ordinarily skilled artisan would have had three years of experience in “streaming content.” *See* PO Resp. 19. Patent Owner’s contrary argument relies exclusively on the claim’s recitation of “control[ing] provision of a media content streaming service” (*id.* at 19–20), but as we explain in more detail below, Patent Owner erroneously assumes that this requires streaming. *See infra* § II.C.

2. *Mr. Gray’s Testimony*

The parties’ arguments regarding the level of ordinary skill in the art reveal a second issue. Patent Owner argues that we should not consider

¹² We have focused on the '938 patent because the parties identify no other persuasive evidence. *See* Tr. 49:25–50:8. For example, neither party identifies evidence regarding the various factors that can inform this inquiry. *See, e.g., Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 666–67 (Fed. Cir. 2000) (identifying factors). Also, Patent Owner’s reliance on Dr. AlRegib’s testimony on this topic (*see* Ex. 2018 ¶¶ 22–23) is unavailing because he provides only unsupported, conclusory assertions. *See* 37 C.F.R. § 42.65(a) (conclusory expert testimony is entitled to little or no weight).

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Mr. Gray’s testimony because he has a degree in economics and lacks a technical degree as required by both parties’ definitions (PO Resp. 20–21), i.e., a bachelor’s or master’s degree in computer science, electrical engineering, or a similar field (Pet. 14; PO Resp. 19). Patent Owner is correct that Mr. Gray does not have the technical degree required by our articulation of the level of ordinary skill. *See* Ex. 1003, 161 (identifying a degree of “BS, Economics”). Petitioner asserts that Mr. Gray’s work experience qualifies him as a person of ordinary skill in the art under either party’s definition, but does not squarely address his lack of a technical degree. *See* Pet. Reply 34–35. *But see* Tr. 40:1–41:1 (Petitioner arguing generally that Mr. Gray’s “years of work experience” are “comparable to that undergraduate degree”), 38:13–17 (Petitioner arguing that Petitioner’s definition allows more or less education), 46:3–13 (Patent Owner arguing that the Petition does not allow for less education).

We cannot rely on Mr. Gray’s testimony regarding the knowledge and understanding of an ordinarily skilled artisan if he does not “at a minimum possess ordinary skill in the art.” *Kyocera Senco Indus. Tools Inc. v. Int’l Trade Comm’n*, 22 F. 4th 1369, 1376–77 (Fed. Cir. 2020) (“To offer expert testimony from the perspective of a skilled artisan in a patent case—like for claim construction, validity, or infringement—a witness must at least have ordinary skill.”). In this Decision, we decline to rely on Mr. Gray’s testimony. We need not (and do not) resolve whether he qualifies as an ordinarily skilled artisan because, as shown by our analysis below, relying on his testimony would not have changed our patentability determinations. Given Lee’s disclosure, Petitioner’s contentions, and the technology at issue, we need not rely on Mr. Gray’s testimony in this proceeding. *See Fanduel*,

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Inc. v. Interactive Games LLC, 966 F.3d 1334, 1344 (Fed. Cir. 2020) (stating that Board does not need to rely on expert testimony in reaching its factual findings); *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1079 (Fed. Cir. 2015) (“Even in court . . . ‘expert testimony is not required when the references and the invention are easily understandable.’ And Board members, because of expertise, may more often find it easier to understand and soundly explain the teachings and suggestions of prior art without expert assistance.” (quoting *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1242 (Fed. Cir. 2010))).

C. Claim Construction

We interpret claim terms using “the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b). Under the principles set forth by our reviewing court, the “words of a claim ‘are generally given their ordinary and customary meaning,’” as would be understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

In the Petition, Petitioner addresses the construction of “user configuration information” and “computing device,” which both appear in each independent claim. Pet. 15–18. Petitioner contends that “user configuration information” (“UCI”) “may be satisfied by (but is not necessarily limited to) any of the following, either individually or in the aggregate: information pertaining to (a) device configuration, (b) operational preferences specific to the device user, or (c) various use settings including connectivity and/or use of available resources.” *Id.* at 15–16. Petitioner

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further contends that “computing devices” is a means-plus-function term. *Id.* at 16–18. In its preliminary response, Patent Owner did not address the meaning of UCI, but disagreed with Petitioner’s construction of “computing devices” and argued that claim 30 instead recites means-plus-function limitations. Prelim. Resp. 36–51.

In the Institution Decision, we provided our preliminary analysis of all three claim construction issues. Inst. Dec. 8–13. First, we agreed with Petitioner’s understanding of “user configuration information,” and we explained that the Specification of the ’938 patent demonstrates that it “is a broad term that includes, for example, device configuration information, user preferences, and information regarding the way in which resources have been used.” *Id.* at 9 (citing Ex. 1001, code (57), 7:50–52, 7:55–67, 14:56–59). Based on the record at that stage, we determined that we did not need to further delimit the scope of that term in order to evaluate Petitioner’s unpatentability grounds. *Id.* Second, we determined that the term “computing device” is not a means-plus-function term (*id.* at 10–11), and third, we determined that independent claim 30 recites nine means-plus-function limitations (*id.* at 11–13).

At trial, neither party disagrees with the latter two determinations. *See* PO Resp. 25 (expressly agreeing with claim 30 determination); Pet. Reply; PO Sur-reply 6. Accordingly, for the reasons previously explained, we reject the Petition’s contention that “computing device” is a means-plus-function term, and we conclude that independent claim 30 recites nine means-plus-function limitations. *See* Inst. Dec. 10–13. We provide additional discussion of our conclusion regarding claim 30 in connection with our substantive discussion of that claim. *See infra* § II.E.3.

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As for “user configuration information” (or “UCI”), the parties discuss the meaning of this term in their briefs. *See* PO Resp. 22–25; Pet. Reply 31–34; PO Sur-reply 1–6. Patent Owner argues that this term should be given “its plain and ordinary meaning, which is ‘information, related to a user, that is used for configuration.’” PO Resp. 22. Patent Owner explains that, while the examples cited by Petitioner and relied upon by the Institution Decision “can be UCI, those types of information are UCI only in cases where they satisfy the plain and ordinary meaning of that term.” *Id.* at 23; *see also* Tr. 50:13–20. Petitioner submits that Patent Owner attempts to improperly narrow the claims. *See* Pet. Reply 31–33.

We need not resolve these arguments because, even assuming that UCI is “information, related to a user, that is used for configuration,” as Patent Owner contends, we find that Petitioner has shown that the challenged claims would have been obvious over the cited references. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). We explain this finding in our analysis of the disputed UCI limitations. *See infra* § II.E.1.b.

However, Patent Owner appears to indirectly advocate for a different, narrower construction of this term, and we disagree that the term UCI should be further limited. In particular, Patent Owner appears to argue that certain information does not qualify as UCI because it is not “unique” to a user or because it is not used to configure a “device.” *See, e.g.*, PO Sur-reply 28–29 (arguing that UCI “must be specific to the user”); Tr. 54:1–55:13 (arguing

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that UCI must be “unique to that user”), 116:19–26 (arguing that device information does not “update the next device”). Patent Owner does not explain why “information, related to a user, that is used for configuration” would need to be unique to a user (as opposed to being associated with a user) or used to configure a device (as opposed to configuring something else, such as the service recited by the claims). Patent Owner does not directly address its implied constructions, and its arguments provide no support for them. We also discern no such support. The Specification indicates that “user configuration information” is a broad term. It states that UCI “may be utilized in facilitating use of the PE device 102 by a particular user to perform requested tasks, and/or in identifying and/or authenticating a user,” and it provides a list of exemplary types of UCI, including device configuration information, user preferences, and information regarding content (e.g., “website access information” and “use settings”). Ex. 1001, 7:41–8:6. Further, the term UCI does not have a particular meaning in this technical field that would impose additional requirements. *See* Tr. 56:13–57:11. As a result, to the extent Patent Owner contends that UCI must be unique to a user and used to configure the user’s device, we disagree.

The parties also dispute whether and when something qualifies as “the same UCI to satisfy each of the [claim limitations].” PO Resp. 24–25; *see* Pet. Reply 33–34; PO Sur-reply 5–6. Patent Owner contends that the scope of “the” UCI includes only *a particular type* of information for a given user, but Patent Owner agrees that this UCI can be “updated” by changing only a subset of the information. *See* Tr. 60:22–61:3, 62:10–20 (providing example of adding a genre of movies to the user’s preferred movie genres); *see also id.* at 59:21–63:6, 117:25–118:4. Petitioner contends that “the UCI”

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includes *all types* of information for a given user. *See* Tr. 34:3–15. We need not resolve this dispute because we find that, even applying Patent Owner’s understanding (as we do in our analysis), Petitioner has shown that the challenged claims would have been obvious. *See infra* § II.E.1.b (addressing disputed UCI limitations).

Finally, we address the meaning of the phrase “provision of a media content streaming service,” which appears in all independent claims. Neither Patent Owner nor Petitioner proposes a construction for this phrase, but we clarify some ambiguity relating to it. In particular, some of Patent Owner’s arguments appear to equate this phrase with the streaming of media content. *See* PO Sur-reply 30 (equating “the provisioning of the media content streaming service” with “the provisioning of media content”); *see also* Pet. Reply 28–29 (arguing Patent Owner conflates concepts). This appears to be premised on Patent Owner’s understanding that the Petition maps “provision[ing] . . . the service” to Lee’s streaming, rather than an implied claim construction. *See, e.g.*, PO Resp. 53–54 (arguing that the Petition maps the service to streaming); Tr. 64:20–25 (arguing that the Petition maps the service to streaming content), 114:4–16 (similar). But this misunderstands the Petition’s contentions, which instead map the claimed “provision[ing] . . . the service” to Lee’s *service*, which provides a recommended content list, streams content, and performs other associated functionality. *See, e.g.*, Pet. 30–36, 42, 50–53; *see also infra* §§ II.E.1.b.i (addressing phrase in context of Lee’s user preferences), II.E.1.b.iv (addressing phrase in context of Lee’s client device information). Moreover, to the extent Patent Owner advocates an implied construction of this phrase, we disagree that it means streaming. The claimed phrase is “provision of a

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... service,” and the words “media content streaming” specify the type of “service” provided. Thus, we determine that “control[ling] provision of a ... service”, as recited in the claims, can include, but is not limited to, controlling streaming of media content.

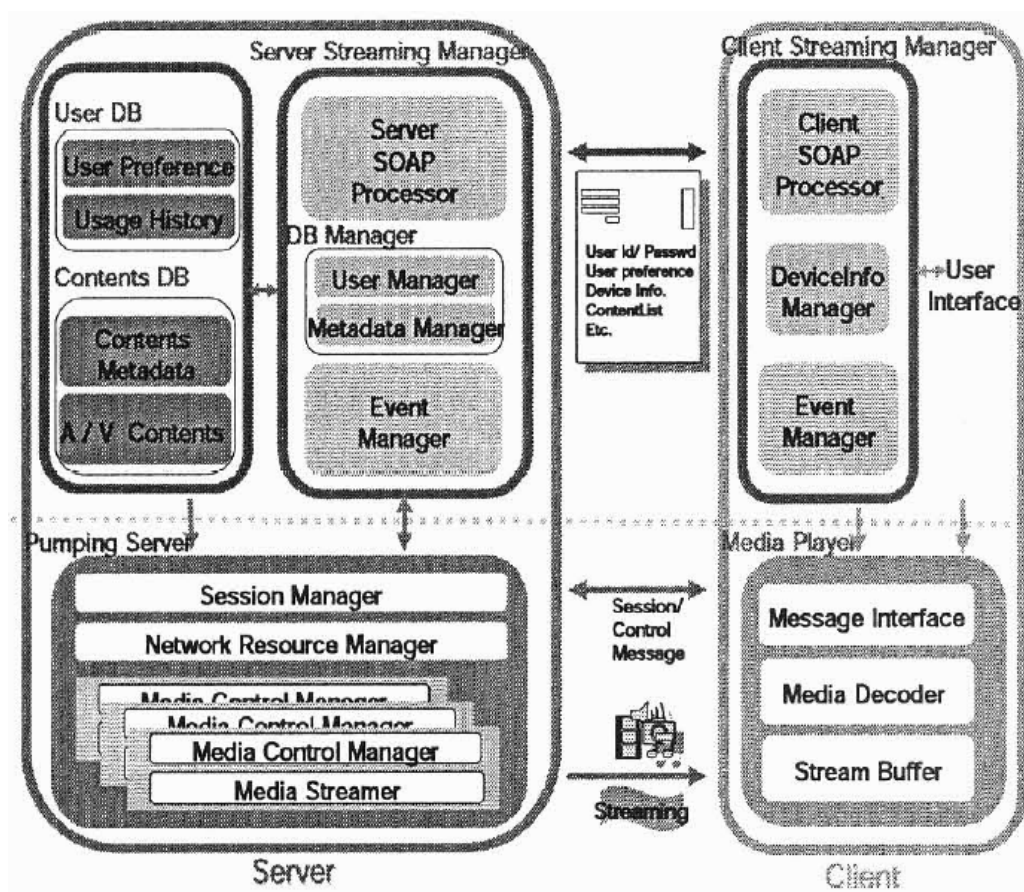
D. Summary of the Prior Art

1. Lee (Ex. 1004)

Lee describes “a server-client streaming system that enables seamless multimedia content download.” Ex. 1004, Abstr. Lee’s system includes a home server and multiple clients, i.e., “multimedia devices, such as personal computers (PCs), televisions, laptop computers, and personal digital assistants (PDA) [that] connect to the home network.” *Id.* § 1. The system receives multimedia content from external sources, stores that content in the home server, and plays it on the clients. *Id.* § 1.

Figure 3 (reproduced below) provides a high-level block diagram of the components of Lee’s system. Ex. 1004 § 2.

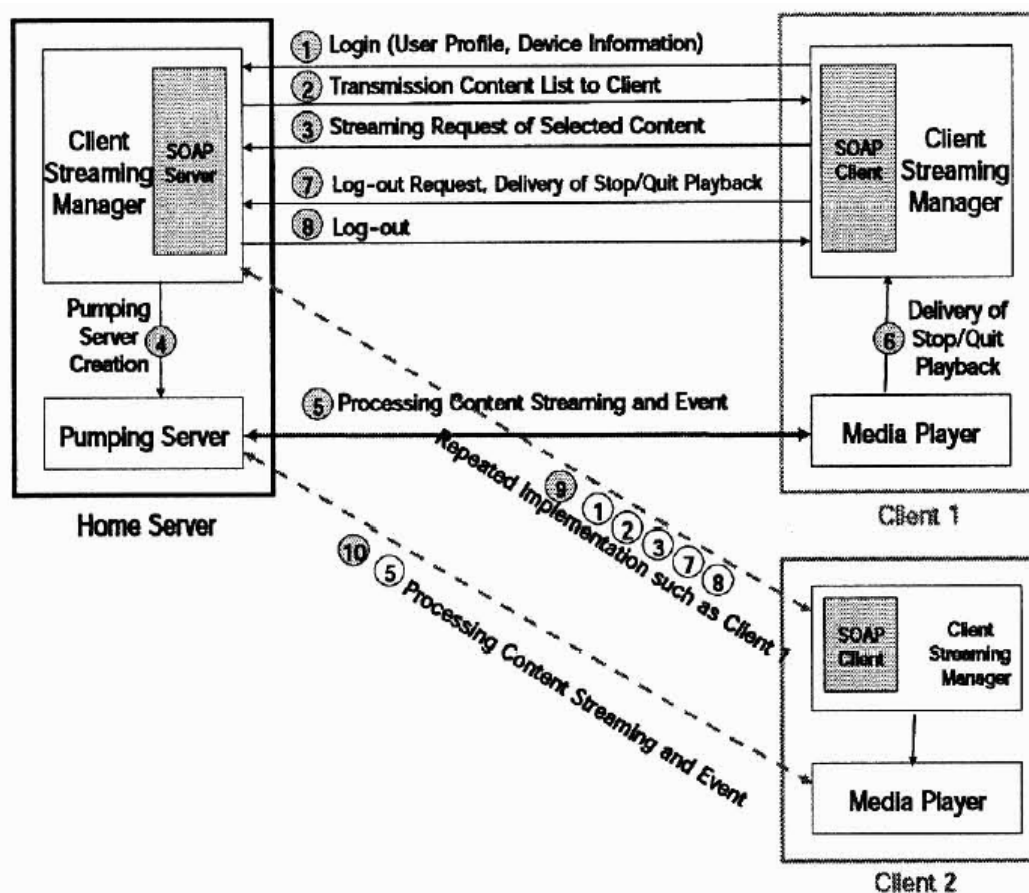
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As shown above, Figure 3 depicts: (1) a server that includes a server streaming manager, user database, content database, and a pumping server, and (2) a client that includes a client streaming manager, a user interface, and a media player. *Id.* §§ 2.1–2.7.

Figure 5 (reproduced below) depicts the operations performed in Lee's system. Ex. 1004 § 3.

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As shown above, Figure 5 shows Lee's server exchanging information with two clients, and it identifies ten exemplary steps performed by these components. *Id.* at Fig. 5.

In step 1, the first client ("client 1") sends a login request to the server. Ex. 1004 § 3.1. The server identifies the corresponding user with a "user ID and password." *Id.* If the user is a new user, a user profile is created and saved. *Id.*; see *id.* at Fig. 6* (showing sample screen for "setting up user preferences").¹³ In addition, the client sends "[d]evice

¹³ We find that an ordinarily skilled artisan would have understood Lee as including a typographical error that swapped the illustrations for Figures 6

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[i]nformation” to the server. *Id.* at Fig. 5; *see also id.* §§ 2.2.2–2.2.3 (explaining that device information is sent to server).

In step 2, the server sends a recommended content list to the client, and from it, a user selects content for streaming. Ex. 1004 §§ 3.2–3.3, Fig. 5. The list is based on: (1) “usage history, which is the information of the content the user has played through the streaming service” and (2) “the details of the user profile, which is based on the information set by users regarding their preferred content title, actor and actress, director, producer, and genre.” *Id.* § 3.1. In addition, the list is divided into content that is “playable” on the device (or “activated”) and content that is “unplayable” (or “inactivated”). *Id.* § 3.2. The server bases this determination on “the device character information of the client that requests the streaming service,” which can include “multimedia device playable media code, CPU capability, display size, bit transmission rate, media playable time, network bandwidth, etc.” *Id.*

Client 1 then selects content for streaming (step 3), and the server creates a pumping server and transmits content to client 1 for streaming (steps 4 and 5). Ex. 1004, Fig. 5; *see id.* §§ 3.3–3.5. At some point, the user stops playback of the media content (step 6), which causes “stop point information” to be delivered to the server and saved in its database (steps 7 and 8). *Id.* at Fig. 5; *see id.* §§ 3.6–3.8.

In step 9, a second client (“client 2”) seeks to resume streaming of the paused content. Ex. 1004 § 3.9. To do this, client 2 first repeats steps 1 to 3. *Id.* at Fig. 5; *see id.* § 3.9 (explaining that client 2’s process is similar to

and 7, so we refer to Figure 7 as Figure 6*. *Accord* Inst. Dec. 17 n.9; Pet. 25.

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client 1 and that device information is sent to the server to determine whether client 2 can handle the playback). If it is the same user on both devices, streaming can be resumed at the prior stop point. *Id.* § 3.9. Finally, in step 10, client 2 stops media playback. *Id.* § 3.10.

2. *Glance (Ex. 1016)*

Glance generates personalized content recommendations. Ex. 1016, code (57). These recommendations are based on “implicit ratings” that are determined from a user’s past interactions with other content. *Id.* at code (57), 1:65–2:41, 3:26–31; *see also id.* at 2:2–5 (explaining that a benefit of using an implicit rating is that it “is collected substantially non-intrusively and at very low cost to the user”). In addition, Glance’s recommendations can also be based on “explicit ratings,” which are provided by the user, for example, when signing up for the service. *Id.* at 3:31–37; *see also id.* at 1:24–29. Glance teaches that user profiles and recommendations can be organized by genre. *Id.* at 3:48–51, 4:5–14. For music content, for example, the genres may include “jazz, classical, rock, pop, etc.,” and the “frequency of recommendations per genre can be made to correspond to the relative frequency with which the user listens to the respective [music] genres.” *Id.* at 3:48–54.

3. *Smith (Ex. 1017)*

Smith describes “a network-based solution for transcoding Internet content” in order to improve the utility of internet devices that “have limited communication, processing, storage and display capabilities.” Ex. 1017, Abstr.; *see id.* § 1 (exemplary devices are “personal digital assistants (PDAs), hand-held computers, Internet-ready phones, and WebTVs”).

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To that end, Smith describes a policy engine that “gathers the capabilities of the client, the network conditions and the transcoding preferences of the user and publisher” and, using that information, selects an appropriate version of content “to be delivered to the client device.” *Id.* § 2; *see also id.* § 4.1. “Various constraints of the devices affect the selection of the content.” *Id.* § 4.1.3. For example, “the display, storage and processing capabilities of the client devices eliminate the selection of individual versions of the content.” *Id.* Smith contemplates versions of content that differ in modality (e.g., video and an image) and/or fidelity (e.g., for video, differing “[s]patial size, temporal size, playback rate, [and/or] bit-rate”). *Id.* § 3.1. Smith states that its system may be deployed at a server, in which case “[t]he system can pre-materialize the alternate versions” of content, store those versions at the server, and then “merely select[] the versions of the content to deliver to the client.” *Id.* § 2.

E. Obviousness Ground Based on Lee Alone

Petitioner contends that the subject matter of claims 1–4, 6–11, 13–15, 17–25, 27, 28, and 30 would have been obvious over Lee. Pet. 18–53; 1334–Pet. 58–76; 1335–Pet. 62–68, 72–78.

Patent Owner contends that Petitioner fails to show that Lee teaches or suggests the UCI required by all claims. PO Resp. 25, 29–60; *see id.* at 61. In addition, Patent Owner contends that Petitioner’s showing for independent claim 30 is insufficient (*id.* at 60–61), and Patent Owner separately addresses dependent claim 6 (*id.* at 62–64), dependent claim 7 (*id.* at 64–66), dependent claim 8 (*id.* at 66–67), dependent claims 9 and 25 (*id.* at 67–68), and dependent claims 17 and 18 (*id.* at 68–77).

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1. Independent Claim 1

a. Undisputed Limitations

Petitioner contends that Lee discloses elements 1pre, 1a, 1b, 1c, 1g, and 1h. Pet. 18–25, 43–46. Patent Owner does not dispute these contentions. *See* PO Resp. For the reasons that follow, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that Lee discloses these elements.

Claim 1 begins: “A system comprising: a plurality of computing devices connected via one or more networks” Ex. 1001, 15:53–55 (elements 1pre and 1a). Petitioner contends that Lee discloses these aspects of the claim because Lee’s home server and client devices teach the claimed “computing devices.” Pet. 18–20 (citing Ex. 1004, Figs. 1, 3, 5, Abstr., §§ 1, 2, 3, 3.10–4). We agree. Lee describes a system that includes a home server as well as multiple client multimedia devices, such as a PC, TV, notebook or PDA. *E.g.*, Ex. 1004 § 1, Fig. 5. Accordingly, we find that Lee discloses elements 1pre¹⁴ and 1a.

Claim 1 next recites “wherein the system is configured to receive login information corresponding to a first user” and “identify the first user based on the login information.” Ex. 1001, 15:55–57 (elements 1b and 1c). Petitioner contends that Lee discloses these limitations. Pet. 21–25. According to Petitioner, Lee’s client receives login information (“user ID and password”) from a user via the client’s user interface and Client

¹⁴ We need not determine whether the preamble (i.e., “[a] system, comprising”) is limiting because Petitioner has sufficiently shown that Lee teaches this aspect of the claim. *See Vivid Techs.*, 200 F.3d at 803.

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Streaming Manager. *Id.* at 21–22 (citing Ex. 1004 §§ 2.1, 3.1, Figs. 3, 7*).¹⁵ Petitioner asserts that the client provides this login information to the server, and the server uses it to identify the user. *Id.* at 23–25 (citing Ex. 1004 §§ 2.4.2, 3.1, Figs. 3, 5). We agree. Lee teaches that a user interface receives a user’s input and provides “log-in information (user ID and password) [to the Client Streaming Manager in the client] when the user logs on.” Ex. 1004 § 2.1, Fig. 3. Lee’s server receives this information from the client device and “identifies the user based on user ID and password.” *Id.* § 3.1, Fig. 3; *see id.* § 2.4.2, Fig. 5. Accordingly, we find that Lee discloses elements 1b and 1c.

In addition, claim 1 recites “receive login information corresponding to the first user from a second computing device of the plurality of computing devices” and “identify the first user based on the login information received from the second computing device.” Ex. 1001, 16:1–5 (elements 1g and 1h). Petitioner contends that Lee discloses these limitations because Lee’s server receives the original user’s login information from a second client device (using the same login procedure previously discussed) and thereby identifies the user. Pet. 43–46 (citing *id.* at 18–25, 30–36; Ex. 1004 §§ 1, 2.1, 3.1, 3.9, Fig. 5, Abstr.). We agree. As noted with respect to element 1b and 1c, we are persuaded that Lee discloses receiving login information and identifying the user based on that information. Moreover, Lee teaches that this same user can login using a

¹⁵ As noted above, we find that an ordinarily skilled artisan would have understood Lee to have inadvertently swapped the images corresponding to Figures 6 and 7, so we refer to Figure 6 as Figure 7*.

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second client device (“client 2”). Ex. 1004 § 3.9, Fig. 5, Abstr.

Accordingly, we find that Lee discloses elements 1g and 1h.

b. Disputed Limitations

Petitioner contends that other limitations of claim 1—i.e., elements 1d, 1e, 1f, 1i, and 1j—are also taught or suggested by Lee. *See* Pet. 25–42, 46–53. Patent Owner disagrees. *See* PO Resp. 29–60.

These disputed limitations all relate to “user configuration information corresponding to the first user.” They recite:

[1d] retrieve user configuration information
corresponding to the first user;

[1e] control provision of a media content streaming
service to a first computing device of the plurality of computing
devices based on the user configuration information
corresponding to the first user;

[1f] update the user configuration information
corresponding to the first user based on the provision of the
media content streaming service to the first computing device;

* * *

[1i] retrieve the updated user configuration information
corresponding to the first user; and

[1j] control provision of the media content streaming
service to the second computing device based on the updated
user configuration information corresponding to the first user.

Ex. 1001, 15:58–16:11 (emphases and element references added).

Petitioner contends that Lee discloses element 1d. Pet. 25–30; *see also id.* at 29–30 (arguing obviousness in the alternative). Specifically, Petitioner contends that the claimed “user configuration information” (“UCI”) is taught by: (1) user preferences, determined from Lee’s user profile, (2) usage history, i.e., identification of content previously played by

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the user, (3) user conditions, i.e., content stop points indicating where content playback was stopped, and/or (4) client device information, such as media codec, CPU capability, and display size associated with a particular client device. *Id.* at 25–27 (citing Ex. 1004 §§ 2.2.2, 2.4.2, 2.5, 3.1–3.2, Fig. 6*). According to Petitioner, Lee’s server stores and manages each of these types of user configuration information for each user. *Id.* at 27–29 (citing Ex. 1004, §§ 1, 2.4.2–2.5, 3–3.2, 3.6–3.9). Petitioner contends that an ordinarily skilled artisan would have understood Lee to disclose that the server retrieves this information from its database so that it could be used, as further described below with respect to element 1e. *Id.* at 29–30 (citing *id.* at 30–36).

Petitioner next contends that Lee discloses element 1e. Pet. 30–36; *see also id.* at 35 & n.6 (arguing obviousness in the alternative). First, Petitioner contends that Lee’s server provides recommendations to a user based on the user’s preferences, usage history, and client device information (and those recommendations are shown on a content list) and streams content to the user (via client 1) using that list. *Id.* at 30–33 (citing Ex. 1004 §§ 1, 2, 3–3.5, 4, Fig. 5, Abstr.). Second, Petitioner contends that Lee’s server controls the manner in which content is streamed to a user (via a client device, such as client 1) based on the content stop points (i.e., user conditions). *Id.* at 33–35 (citing Ex. 1004 §§ 3, 3.3–3.9).

Also, Petitioner contends that Lee teaches or suggests updating the UCI, as required by element 1f. Pet. 36–42. In particular, according to Petitioner, Lee teaches updating: (1) usage history by tracking what the user has watched and using it for recommendations (*id.* at 37–38 (citing Ex. 1004 §§ 2.4.2–2.5, 3.1–3.5)), (2) user conditions by storing the stopping point

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when a user stops playback and logs off (*id.* at 39–40 (citing Ex. 1004 §§ 3.7–3.8)), and (3) client device information by storing and retrieving information about client 1 (*id.* at 42 (citing Ex. 1004 §§ 2.2.2–2.2.3, 2.4.2, 3–3.2)). *See also id.* at 37–40 (arguing obviousness in the alternative regarding usage history and user conditions). Further, Petitioner contends that it would have been obvious in light of Lee’s teachings to update user preferences manually via Lee’s user profile interface. *Id.* at 40–42 (citing Ex. 1004, Fig. 6*). In the alternative, Petitioner contends that it would have been obvious in light of Lee’s teachings to automatically update user preferences based on the user’s viewing habits. *Id.* at 41–42.

Finally, Petitioner contends that Lee discloses elements 1i and 1j in two ways, as discussed above with respect to other elements of claim 1. Pet. 46–53 (citing *id.* at 25–46); *see also id.* at 47, 49, 51, 53 (arguing obviousness in the alternative). Specifically, Petitioner first contends that, after the user logs into a new client device (i.e., client 2), Lee’s server provides a recommended content list to client 2 based on the updated user preferences, usage history, and client device information. *Id.* at 47–48, 51 (citing Ex. 1004 §§ 3.2, 3.9, Fig. 5). Petitioner also contends that Lee resumes playback on client 2 based on the updated user conditions (i.e., stop points) and updated client device information. *Id.* at 48–49, 52–53 (citing Ex. 1004 §§ 3.6–3.9, Fig. 8).

Patent Owner responds that Petitioner fails to identify any single aspect of Lee that qualifies as UCI and satisfies each and every limitation of the claim. PO Resp. 29–60. Patent Owner argues that “Petitioner provides a scattershot explanation of why some UCI allegedly satisfies some limitations . . . while other UCI allegedly satisfies other limitations . . . , with no

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coherent theory.” *Id.* at 30. According to Patent Owner, “Petitioner purports to identify in Lee five alleged types of UCI: (1) user preferences, (2) usage history, (3) user conditions, (4) client device information, and (5) content recommendations,” but “[n]one of these types of information . . . can satisfy each limitation of [c]laim 1.” *Id.* at 31–32 (citing Pet. 25–27, 30–33; Ex. 2018 ¶ 42). Patent Owner argues that Lee’s user preferences cannot be the claimed UCI because they fail to satisfy element 1f. *Id.* at 32–35. Patent Owner also argues that Lee’s usage history fails to qualify as UCI and fails to satisfy elements 1d and 1e. *Id.* at 35–42. Patent Owner next argues that Lee’s user conditions fail to satisfy element 1e. *Id.* at 43–48. Patent Owner further argues that Lee’s client device information fails to qualify as UCI and fails to satisfy elements 1d, 1e, and 1f. *Id.* at 48–55. Finally, Patent Owner argues that Lee’s content recommendations also fail to satisfy the claim’s limitations. *Id.* at 55–59.

Having considered the parties’ arguments and evidence, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that Lee teaches or suggests each of elements 1d, 1e, 1f, 1i, and 1j. In particular, we agree with Petitioner that Lee’s user preferences, usage history, user conditions, and client device information each teach the claimed UCI, and that each of these mappings satisfy each claim limitation (i.e., elements 1d, 1e, 1f, 1i, and 1j).

Below, we address each type of UCI in turn.¹⁶ Based on our findings regarding any one of these types, we would determine that Lee teaches or suggests elements 1d, 1e, 1f, 1i, and 1j.

¹⁶ We do not address Patent Owner’s arguments that Lee’s recommended content list does not qualify as UCI (*see* PO Resp. 55–59) because we do not

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i. Lee's user preferences

Petitioner maps Lee's user preferences to the claimed UCI and contends this satisfies elements 1d, 1e, 1f, 1i, and 1j. Pet. 25, 27–32, 40–42, 47–48, 50–51; *see also* Pet. Reply 1 (summarizing relevant portions of Petition). Patent Owner argues that this mapping is deficient because Lee fails to teach “updat[ing]” user preferences “based on the provision of the media content streaming service to the first computing device,” as required by element 1f. PO Resp. 32–35; PO Sur-reply 7–11.

Having considered the parties' arguments and evidence, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that Lee's user preferences teach the claimed UCI, and Lee thereby teaches or suggests elements 1d, 1e, 1f, 1i, and 1j.

Lee's server stores and maintains user preferences (such as preferred genres and directors) for each user. *E.g.*, Ex. 1004 §§ 1, 2.1, 2.4.2; *see also id.* at Figs. 3–4 (showing that user preferences are stored in the server's “User Database” and managed with “User Manager”). After a user logs on to the server, the server retrieves the corresponding user preferences and provides a recommended content list to the user based on those preferences. *Id.* §§ 3.1–3.2; *see also id.* §§ 1 (“This system is stored in a home server so users can get media content recommendation depending on their preferences”), 4 (similar). Lee's server sends the recommended content list to whichever client device the user is currently using. *Id.* §§ 3.9, 4, Figs. 5, 8. From this, we find that Lee teaches that the home server retrieves user preferences and controls provision of its service to client 1 and client 2 based

understand the Petition to include such a contention. *Accord* Inst. Dec. 19–22 (summarizing the Petition's mapping of UCI).

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on the user's preferences. Accordingly, we are persuaded that Lee's user preferences teach the claimed UCI and satisfy elements 1d, 1e, 1i, and 1j.

In addition, we are persuaded that Lee's server updates the user preferences, as required by element 1f, because Lee indicates that its server updates its database when a user makes a manual update to his preferences. In particular, Lee expressly teaches that a user can set his preferences in a user interface when registering for the service (Ex. 1004 §§ 2.1, 3.1, Fig. 6*), and an ordinarily skilled artisan would have assumed that these preferences can be later changed by the user (*see, e.g., id.* at Abstr. (referencing "storing/managing" user preferences), § 1 (proposing a system that provides "intelligent recommendation[s] regarding the media content [users] want based on the user preferences stored on the home server")). As a result, we find that Lee suggests manually updating the user preferences using its user interface, and we find that such an update would have been obvious in view of Lee. *See* Pet. 40–42; Pet. Reply 4–5; *Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1329 (Fed. Cir. 2009) ("[W]hile an analysis of obviousness always depends on evidence that supports the required *Graham* factual findings, it also may include recourse to logic, judgment, and common sense available to the person of ordinary skill that do not necessarily require explication in any reference or expert opinion."). Moreover, an ordinarily skilled artisan would have understood that a user's manual update to his preferences would have caused a corresponding update to the preferences stored in the user preferences database of Lee's server. *See* Pet. 41–42 (explaining that an ordinarily skilled artisan would have found it obvious to update the user profile at the server when user preferences change); *see also* Ex. 1004 §§ 2.1 (stating that the user interface

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provides user preferences to client streaming manager), 2.2.3 (stating that soap processor in client streaming manager sends user preferences to the server's soap processor), 2.4.3 (stating that server soap processor stores user preferences in the server's user manager), Fig. 3 (showing Lee's server as including a user preferences database).

Furthermore, we are persuaded that Lee's server updates its user preferences "based on the provision of the media content streaming service to the first computing device," as element 1f also requires. *See* Pet. 40–42; Pet. Reply 4–5. Petitioner maps the "provision of the media content streaming service" to Lee's provision of its service, and we agree with Petitioner that this includes the user interface for updating user preferences.¹⁷ *See* Pet. Reply 4; *see also* Ex. 1004 § 3.1, Fig. 6* (exemplary display for registering user preferences), Fig. 8 (illustrating user interface as also including recommended content list). As a result, we find that Lee suggests that the server updates user preferences "based on the provision of the media content streaming service to the first computing device" because the server updates user preferences as a result of (and using) the user interface. *See* Pet. Reply 5 ("Lee's system updates the user preferences at

¹⁷ We note that Patent Owner did not disagree with this contention. *See* PO Sur-reply 7–10; Tr. 66:8–68:1, 69:14–71:9. To the extent Patent Owner contends that the Petition includes a different or contrary contention (*see* Tr. 64:20–25), we disagree (*see, e.g.*, Pet. 40–41). *See also supra* § II.C (explaining that "provision of the media content streaming service," as recited by the claim, is not limited to streaming). We find that Lee's service includes both its content streaming as well as functions that facilitate this streaming, such as its logon screen, user preference registration, and content recommendations.

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the server where they are stored based on provision of streaming service because the interface is part of the streaming service.”).

Patent Owner’s contrary arguments are unavailing. *See* PO Resp. 33; PO Sur-reply 7–10. Patent Owner argues that “allowing a user to manually update preferences clearly would not satisfy the requirement that the *system* of [c]laim 1 update the UCI ‘based on the provision of the media content streaming service to the first computing device’” (PO Resp. 33 (emphasis omitted)); however, as explained above, it is Lee’s server that updates its database based on the provision of its service.

Patent Owner also attempts to distinguish Lee on the grounds that Lee’s updates are based on manual input by the user “rather than” the provision of the service (PO Resp. 33; PO Sur-reply 9), but this is a false dichotomy. Lee’s preferences are updated based on *both* the user’s manual input *and* the provision of the service, and Patent Owner fails to identify sufficient support for its assumption that the claimed “update” can only be “based on” one of these. Patent Owner relies on Dr. AlRegib, who testifies that “a manual update to user preferences, through a user interface, *is not the same as* the system updating the user preferences based on provision of the media content streaming service” (Ex. 2018 ¶ 44 (emphasis added)), but this testimony misses the mark. A user’s update is “not the same as” the server updating its database as a result of that update, but this does not undermine Petitioner’s contention that the server makes an update.

Relatedly, in connection with dependent claim 6, Patent Owner asserts that the “update” recited by element 1f must be an “automatic update” (PO Resp. 63), and to the extent Patent Owner also advances this argument for independent claim 1, it is unavailing. Patent Owner does not identify

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support in the intrinsic record for its contention that the “update” recited in the claim excludes manual updates (i.e., those initiated by a user), and we agree with Petitioner that the Specification would not support such a construction. *See* Pet. Reply 2. Indeed, the Specification describes both “automatic” and “manual” updates of UCI. Ex. 1001, 11:44–57, 13:25–32; *see also id.* at code (57), 3:37–40, 14:60–62. Patent Owner responds that none of these passages address updating UCI “based on the provision of a media content streaming service” specifically (PO Sur-reply 7–8 (emphasis omitted)), but the Specification includes *no* reference to such an update. *Cf.* Ex. 1001, 11:44–57 (contemplating manual updates “based on user commands” and automatic updates “based on pre-determined conditions”). Ultimately, Patent Owner identifies (and we perceive) no support in the intrinsic record for requiring the claimed “update” to be an automatic one that does not result from user input.

Finally, Patent Owner’s reliance on Dr. AlRegib’s testimony (*see* Ex. 2018 ¶ 44) is unavailing because it suffers from the same problems. *See also infra* § II.E.1.c.

Accordingly, we find that Lee’s user preferences teach the claimed UCI, and that Lee teaches or suggests elements 1d, 1e, 1f, 1i, and 1j. For brevity, we do not address Petitioner’s alternative contention that it would have been obvious to automatically update’s Lee user preferences (Pet. 41; Pet. Reply 5–6) or Patent Owner’s critiques of that contention (*see* PO Resp. 34–35; PO Sur-reply 10–11).

ii. Lee’s usage history

Petitioner maps Lee’s usage history to the claimed UCI and contends this satisfies elements 1d, 1e, 1f, 1i, and 1j. Pet. 25–32, 36–39, 47–48, 50–

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51; *see also* Pet. Reply 6–7 (summarizing relevant portions of Petition). Patent Owner argues that this mapping is deficient because: (1) Lee’s usage history fails to qualify as UCI, and (2) Petitioner fails to show that Lee teaches “retriev[ing]” usage history, as required by element 1d, and “control[ling] provision of a media content streaming service” based on the usage history, as required by element 1e. PO Resp. 35–42; PO Sur-reply 12–22.

Having considered the parties’ arguments and evidence, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that Lee’s usage history teaches the claimed UCI, and Lee thereby teaches elements 1d, 1e, 1f, 1i, and 1j.

Lee teaches that a user “is presented with a recommended content list created based on usage history, which is the information of the content the user has played through the streaming service,” and the user’s preferences (as noted above). Ex. 1004, § 3.1. The server’s user database stores usage history for each user. *Id.* at Fig. 3 (showing “Usage History” in server’s “User DB”); *see also id.* §§ 2.4.2 (stating that mapping table, which stores user IDs and passwords, indexes the “Usage History”), 2.5 (“User History DB stores/manages content list and the timestamp of the user’s most recent log-on to the server and received streaming.”). Lee’s server sends the recommended content list to whichever client device is currently being used. *Id.* §§ 3.9, 4, Fig. 5. Lee teaches that the recommended content list depends on the *current* usage history and, for example, identifies content previously stopped mid-playback on a different device. *Id.* § 3.9, Fig. 8; *see also id.* §§ 1, 4 (explaining that Lee’s system “enables the seamless data streaming

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of large amounts of multimedia content even if the user switches to another device or client”).

From this, we find that Lee’s server “retrieve[s]” usage history corresponding to the user and “control[s]” provision of the service based on that usage history (by providing a recommended content list based on that history), satisfying elements 1d and 1e. We also find that Lee teaches “updat[ing]” the usage history when content is stopped mid-playback, satisfying element 1f. We further find that Lee teaches retrieving that updated usage history and controlling the provisioning of the service to a second device based on the updated usage history, satisfying elements 1i and 1j.

Patent Owner’s contrary arguments are unavailing. *See* PO Resp. 35–42; PO Sur-reply 12–22.

Patent Owner first argues that Lee’s usage history does not teach the claimed UCI. PO Resp. 35–41. Patent Owner begins by arguing that Petitioner fails to show that usage history qualifies under Petitioner’s construction (*id.* at 35–36), but we disagree. Patent Owner incorrectly assumes that the Petition is premised on a contention that usage history qualifies as UCI because the Specification states that UCI includes “use of available resources.” *See* PO Resp. 35–36 (arguing that the Specification uses the term “resources” to refer to processing resources, memory resources, and the like); *see also* PO Sur-reply 12–13. But the Petition instead contends that UCI is broad enough to include Lee’s usage history, as shown by the different types of information that all qualify as UCI. *See* Pet. 15–16, 25–26 (quoting from the ’938 patent and emphasizing “website access information” “use settings” *and* “use of available resources”); *see*

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also Pet. Reply 7. So, even assuming *arguendo* that Patent Owner is correct that the Specification uses “resources” to refer to something different than content, we still agree that Lee’s usage history qualifies as UCI under Petitioner’s construction. Indeed, Patent Owner’s expert agrees that usage history can be UCI if it is used for configuration. *See, e.g.*, Ex. 1041, 246:23–247:5, 250:14–251:2.

Patent Owner next argues that Petitioner fails to show that usage history qualifies as UCI under Patent Owner’s construction (PO Resp. 37–41), but we disagree. Lee’s usage history is “information, related to a user, that is used for configuration” because it is associated with a given user and is used to configure the recommended content list. *See also supra* § II.C (addressing construction of UCI). Patent Owner’s argument to the contrary is premised on the contention that Lee fails to “configur[e] [] anything based on the usage history.” PO Resp. 37. In particular, according to Patent Owner, “[n]othing in Lee . . . even suggests that usage history provides content recommendations,” and “Lee plainly teaches that user preferences . . . are the sole source of Lee’s content recommendations.” *Id.* at 37–39 (citing Ex. 1004 §§ 1, 2, 2.4.2, 4; Ex. 2018 ¶¶ 54–55). But this argument is belied by the reference itself. Lee expressly states that a user “is presented with *a recommended content list created based on usage history*, which is the information of the content the user has played through the streaming service,” as well as the user’s preferences. Ex. 1004 § 3.1 (emphasis added); *see also, e.g., id.* § 2.4.2, Fig. 3. Patent Owner cites to several other passages of Lee, but none undercut or contradict this teaching. *See* PO Resp. 37–39 (citing Ex. 1004 §§ 1, 2, 2.4.2, 4).

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Patent Owner points to Dr. AlRegib’s testimony in support of its arguments, but this testimony is unavailing. *See* Ex. 2018 ¶¶ 50–59. In particular, we assign little to no weight to the cited testimony¹⁸ because it: (1) discusses matters outside of Dr. AlRegib’s technical expertise (such as the content or sufficiency of Petitioner’s contentions), (2) includes the same logical errors as Patent Owner’s arguments, and/or (3) is contradicted by Lee’s express disclosure. Indeed, Dr. AlRegib acknowledges the salient disclosure in Lee, but simply—and without explanation—concludes that it is insufficient. *Id.* ¶ 54 (testifying that “the bare statement . . . falls far short of providing a [person of ordinary skill in the art] with any reason to believe that Lee’s disclosed system can provide content recommendations based on usage history”). We give little weight to this testimony because it is insufficiently explained and, more importantly, is contradicted by Lee’s disclosure.

In its Sur-reply, Patent Owner seeks to address the salient passage of Lee in an attempt to reconcile its contentions with Lee’s disclosure (*see* PO Sur-reply 13–21), but we agree with Petitioner that those arguments are untimely and, thus, forfeited.¹⁹ *See* Paper 38 (Petitioner’s chart identifying

¹⁸ There is one exception: we credit Dr. AlRegib’s testimony regarding an ordinarily skilled artisan’s understanding of the term “resource.” *See* Ex. 2018 ¶ 51.

¹⁹ Patent Owner contends that it addressed the salient passage in its Response by quoting from it. *E.g.*, PO Sur-reply 14 n.3 (citing PO Resp. 35). We disagree. The argument presented in the Response is clear: Patent Owner quotes *different* passages from Lee and asserts that “[o]ther than these passages, Lee provides no teaching or suggestion of how content recommendations are generated or provided.” PO Resp. 38–39 (citing Ex. 1004 §§ 1, 2, 7). *But see* Ex. 2018 ¶ 54 (quoting passage not addressed in the Response). Patent Owner’s attempt to change its argument in its Sur-

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new arguments); Paper 39 (Patent Owner’s responsive chart); *see also supra* § II.A. Although Patent Owner attempts to frame the new arguments as a critique of Petitioner’s failure to “explain this sentence within the context of Lee as a whole” (PO Sur-reply 13–14 (citing Pet. Reply 9)), we do not agree that any such explanation is required. *Cf.* Pet. 31–32 (including relevant contention); Inst. Dec. 17 (summarizing Lee’s teachings as disclosing that the recommended content list is based on the usage history). Notably, in this Decision, we need not (and do not) rely on the arguments presented in Petitioner’s Reply (to which Patent Owner’s untimely arguments are allegedly responsive). *See* Pet. Reply 9–12.

But even if Patent Owner’s argument had been properly raised, it would not have been persuasive. In the Sur-reply, Patent Owner argues that the “usage history” referenced in Lee’s Section 3.1 is simply just the timestamp used to implement Lee’s stop point functionality. PO Sur-reply 16–21. In support, Patent Owner reasons that Lee’s User Database includes “a list of preferred content that the user enters through the User Interface,” but “Lee’s discussion concerning ‘usage history’ is less clear.” *Id.* at 16–17 (citing Ex. 1004 §§ 2.1, 2.4.3, 2.5). Patent Owner asserts that the “User History DB, which is part of the User DB, ‘stores/manages’ two things: (1) ‘content list’ and (2) ‘the timestamp of the user’s most recent log-on to the server and received streaming.’” *Id.* at 17–18 (quoting Ex. 1004 § 2.5). According to Patent Owner, this “timestamp” is the “stop

reply is improper. *See* Trial Practice Guide 73–74 (explaining that a party may not “proceed in a new direction with a new approach as compared to the positions taken in a prior filing” and noting that a “sur-reply that raises a new issue . . . may not be considered”).

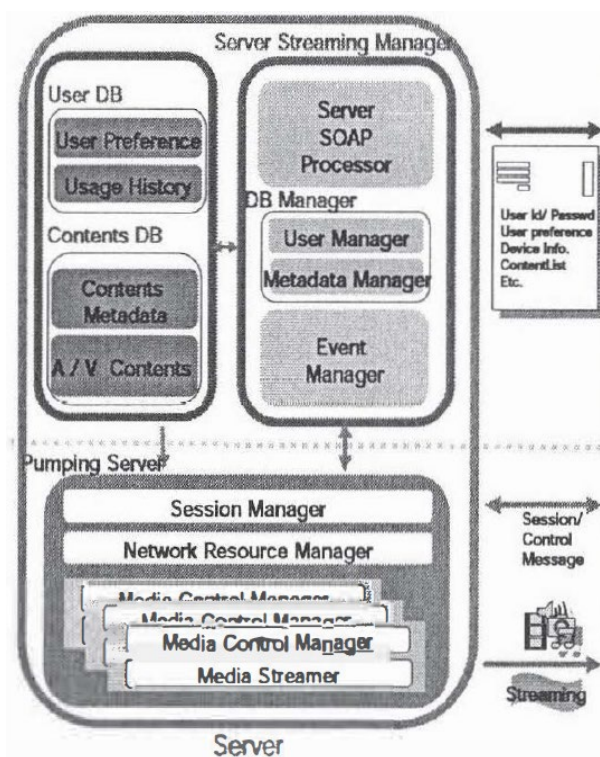
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point information,” which is saved to the database when a user stops streaming and used to resume playback on a different device. *Id.* at 18–19 (citing Ex. 1004 § 3.8, Fig. 5). According to Patent Owner, “[n]othing in Lee states that this timestamp information is retained beyond the need to implement Lee’s stop point functionality.” *Id.* at 19; *see also id.* at 18 (arguing that Lee does not support Petitioner’s contention that “[w]henver the user receives streaming media, it is stored in the User History DB as a persistent log” (quoting Pet. 37)).

We disagree with Patent Owner’s understanding of Lee.²⁰ In Figure 3, Lee provides a block diagram of Lee’s system, and an excerpt of this figure showing the server is reproduced below:

²⁰ Although Patent Owner relies on Lee’s disclosure, Patent Owner cites no supporting evidence other than its expert’s conclusory statement. *See* PO Sur-reply 17 (citing Ex. 2018 ¶ 54). It is well settled that attorney arguments and conclusory statements have little probative value. *See, e.g., Icon Health & Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1043 (Fed. Cir. 2017) (“Attorney argument is not evidence.”); 37 C.F.R. § 42.65(a) (conclusory testimony is entitled to little or no weight).

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Ex. 1004, Fig. 3 (excerpt). The excerpt of Figure 3 (above) depicts the components of Lee's server. Of note, the top left of the figure shows that Lee's server includes: (1) a "User DB" that has "User Preference" and "Usage History" databases, and (2) a "Contents DB" that has "Contents Metadata" and "A/V Contents" databases. Lee teaches that the Usage History database²¹ stores and manages a "content list" *and* "the timestamp" information. Ex. 1004 § 2.5; *see* PO Resp. 17–18 (agreeing with this understanding). From this, we find that Lee teaches that its Usage History database stores a list of previously viewed content along with a

²¹ Given the context of Lee, we understand "User History DB" to refer to the "Usage History" database depicted in Figure 3. Patent Owner appears to share this understanding. *See* PO Sur-reply 17 (referring to "the User History DB, which is part of the User DB" and citing Figure 3 in support).

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corresponding timestamp identifying the stop point associated with most recent streaming of that content. This understanding is consistent with the remainder of Lee’s disclosure. *See, e.g.*, Ex. 1004 § 3.1 (stating that the usage history and user preferences are used to provide a recommended content list).

Patent Owner’s contrary arguments focus on the timestamp but fail to consider that the Usage History database *also includes a content list* (*see* PO Sur-reply 17–20), which shows that Lee stores an identification of content with the corresponding stop points. Ex. 1004 § 2.5, Fig. 3. Indeed, Lee’s reference to a “content *list*” indicates that this database is capable of identifying multiple items of content (*id.* § 2.5 (emphasis added)), and Lee makes it clear that the content itself is stored elsewhere (*id.* at Figs. 3–4).²² Patent Owner argues that Lee fails to teach storing an identification of *all* content ever streamed by the user (*see* PO Sur-reply 18; Tr. 72:15–20, 74:24–26), but that argument is inapposite. Finally, Patent Owner suggests that Figure 8 indicates that Lee only stores a single stop point (*see* PO Resp. 19), but we disagree. Although the text of Figure 8 is illegible, it depicts a content list as a table. Ex. 1004, Fig. 8. The third row is highlighted and partially obscured by a popup window that has a short message and two input boxes. *Id.* Lee provides the following explanation:

Multimedia content that was stopped will be displayed on top of the user interface and a pop-up window appears asking if

²² In addition, we find that this “content list” is not the same as the recommended content list provided to the user. The latter is created based on both the usage history and the user preferences (i.e., the two portions of the User Database). *See, e.g.*, Ex. 1004 § 3.1, Fig. 3. We observe that Dr. AlRegib expressly recognizes that Petitioner understands Lee in this way and does not disagree. *See* Ex. 2018 ¶¶ 84, 86.

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data streaming is to be continued. If the user selects “consecutive playing,” the server agent is notified and streaming resumes. If the user does not select consecutive playing, content will be started all over from the beginning.

Id. § 3.9. From this, we understand Figure 8 to show a pop-up window, displayed after content was selected from the content list, that asks whether to resume streaming from the previous stop point (i.e., “consecutive playing”) or to begin streaming at the beginning of the content. *See id.* § 3.9, Fig. 8. The third row of the table is selected in the figure, and Lee states that “[m]ultimedia content that was stopped will be displayed on the top.” *Id.* Thus, we understand this disclosure to indicate that stop points are stored for at least three different items of content.

Finally, Patent Owner argues that the Petition fails to allege that Lee’s server “retrieve[s]” usage history and “control[s]” provision of the service using it, as required by elements 1d and 1e (as well as 1i and 1j). PO Resp. 41–42 (citing Pet. 29–36, 50–53). We disagree. *Accord* Inst. Dec. 19–21 (summarizing the Petition as expressly including those contentions). In connection with element 1d, the Petition: submits that UCI (including usage history) is stored at the server; contends that an ordinarily skilled artisan “would have understood that UCI should be retrieved before it can be used” by the server; and references the discussion of element 1e. Pet. 29; *see also id.* at 25–26 (mapping UCI to usage history), 27–28 (asserting that Lee’s server stores “Usage History” (emphasis omitted)). In connection with element 1e, the Petition explains how the usage history is used by the server to control provision of the service (*id.* at 30–32), and it specifically explains that the recommended content list is “created based on usage history” (*id.* at 31–32 (emphasis omitted)).

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Accordingly, for these reasons, we find that Lee’s usage history teaches the claimed UCI, and that Lee teaches elements 1d, 1e, 1f, 1i, and 1j.

iii. Lee’s user conditions (i.e., stop points)

Petitioner maps Lee’s user conditions (i.e., the stop points indicating the point where contact playback was stopped) to the claimed UCI and contends this satisfies elements 1d, 1e, 1f, 1i, and 1j. Pet. 25–30, 33–35, 39–40, 48–50, 52–53; *see also* Pet. Reply 16–17 (summarizing relevant portions of Petition). Patent Owner argues that this mapping is deficient because Lee fails to teach “control[ling] provision of a media content streaming service” based on content stop points, as required by elements 1e and 1j. PO Resp. 43–48; PO Sur-reply 23–27.

Having considered the parties’ arguments and evidence, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that Lee’s user conditions teach claimed UCI, and Lee thereby teaches or suggests elements 1d, 1e, 1f, 1i, and 1j.

Lee’s server sends a recommended content list to whichever client device is currently being used. Ex. 1004 §§ 3.1–3.2, 3.9, Fig. 5. After a user selects content from that list, the server begins streaming that content to the device. *Id.* §§ 3.3–3.5. When the user stops streaming and logs off the service, the device sends a “stop point” to the server identifying the point at which playback of the content was stopped. *Id.* §§ 3.6–3.8; *see also id.* §§ 2.2.1, 2.2.2. If a user later selects that content from the recommended content list, then “a pop-up window [is presented] asking if data streaming is to be continued.” *Id.* § 3.9, Fig. 8. “If the user selects ‘consecutive playing,’ the server agent is notified and streaming resumes.” *Id.* § 3.9. From this, we find that Lee teaches that its home server stores and retrieves a content stop

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point that allows a user to pause and resume streaming of the same content on different devices, satisfying element 1d. We also find that Lee teaches controlling provision of its service based on this stop point, satisfying element 1e.

We further find that Lee teaches updating the stop point, retrieving the updated stop point, and controlling streaming based on the updated stop point, satisfying elements 1f, 1i, and 1j. In particular, Lee states that a user may begin content streaming from a stop point or from the beginning of the content (Ex. 1004 § 3.9), and Lee states that a stop point is stored when the user stops streaming and logs off (*id.* §§ 3.6–3.8, Fig. 5). Thus, we find that an ordinarily skilled artisan would have understood Lee to disclose updating a prior stop point when a user resumes previously played content before stopping playback. *See also, e.g.*, Ex. 1004 §§ 1 (stating that “users receiving the data streaming service . . . are assured of seamless access to such multimedia content even if they switch devices”), 4 (explaining that its system “enables the seamless data streaming of large amounts of multimedia content even if the user switches to another device or client”).

In addition, even if we had not found that Lee teaches updating a stop point, we would have been persuaded that Lee suggests this. *See also Perfect Web*, 587 F.3d at 1329 (affirming district court’s finding that claim “would have been obvious as a matter of common sense,” without relying on expert testimony, where it was undisputed that prior art disclosed the claimed steps and the “potential value” of repeating them was clear). Indeed, it would have “enable[d] known usage models,”²³ such as pausing

²³ Patent Owner agrees with Petitioner that “starting or stopping a movie multiple times was known in 2007.” PO Sur-reply 23.

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and resuming content several times. Pet. 35 & n.6; *see also KSR*, 550 US at 421 (“A person of ordinary skill is also a person of ordinary creativity, not an automaton.”).

Patent Owner presents two arguments to the contrary, but both are unavailing. First, Patent Owner argues that Lee does not teach stopping and resuming multiple times (PO Resp. 43–44), but we disagree as explained above. Although Lee does not specifically address stopping and starting multiple times, we are persuaded that an ordinarily skilled artisan would have nonetheless understood Lee’s disclosure to teach or suggest this. *See* Pet. 30, 34–35, 53; Pet. Reply 17–18. Patent Owner’s reliance on Dr. AlRegib’s testimony is unavailing because he discusses the sufficiency of Petitioner’s arguments rather than an ordinarily skilled artisan’s understanding of Lee. *See* Ex. 2018 ¶ 66; *infra* § II.E.1.c (explaining that such testimony is unhelpful). Moreover, even if Patent Owner were correct that it was merely “possible” to accommodate stopping and resuming multiple times with Lee’s system (PO Resp. 44 (emphasis omitted)), we agree with Petitioner that incorporating this capability into Lee’s server would have been obvious, for the reasons explained above. *See* Pet. Reply 17–22.

Second, Patent Owner argues that Lee controls streaming based on user input *rather than* “the presence or absence of any stop point” (PO Resp. 45–48; PO Sur-reply 24–27), but this is a false dichotomy. Lee streams content based on *both* the user’s input *and* the content stop point, and Patent Owner fails to identify sufficient support for its assumption that the claimed “control” can only be “based on” one of these. In other words, although we agree with Patent Owner that Lee will only resume playing

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from the content stop point when the user selects consecutive playing (*see* PO Resp. 45–47), Lee teaches that, after the user selects consecutive playing, the server controls the streaming of that content based on the content stop point, as the claim requires. *See also* Pet. Reply 22–23 (explaining why the claim does not prohibit user input); § II.E.1.b.i (addressing a similar false dichotomy relating to user preferences). We disagree with Patent Owner’s argument (*see* PO Sur-reply 24–25) that the server does not perform the control. It is the server that uses the stop point to select where in the content to begin streaming.

Patent Owner’s reliance on Dr. AlRegib’s testimony (*see* Ex. 2018 ¶¶ 66–69) is unavailing because it is premised on the same logical errors and addresses the sufficiency of Petitioner’s contentions rather than how an ordinarily skilled artisan would have understood Lee’s disclosure. *See infra* § II.E.1.c. Moreover, Dr. AlRegib’s testimony appears to be premised on the assumption that element 1e requires “automatic[] control” or prohibits user involvement (*see* Ex. 1041, 171:19–173:5), but the claim includes no such limitations. *Cf.* PO Sur-reply 24 (“The question is not whether the claim does (or does not) allow any user input,” but whether the user’s decision “controls the provision of the media streaming.”).

Finally, in its Sur-reply, Patent Owner contends that Petitioner failed to include or consider the “TV-Anytime Specification,” referenced in Lee, undermining Petitioner’s argument that it would have been obvious to modify Lee as proposed. PO Sur-reply 23–24. This argument was not presented in the Response and is not fairly responsive to the Reply, so it is untimely. *See supra* § II.A. But, even if it had been timely presented, it would not have been persuasive because the TV-Anytime Specification has

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no apparent relevance to the disputed issues in this proceeding. *See* Ex. 1004 §§ 2 (stating that user preferences are managed by metadata “constituted according to the XML Metadata Schema defined in TV-Anytime”), 2.5 (referencing TV-Anytime’s method of classifying content), Fig. 2 (depicting TV-Anytime at the top of the transport stack above TCP and IP).

Accordingly, for these reasons, we find that Lee’s user conditions (i.e., stop points) teach the claimed UCI, and Lee teaches or suggests elements 1d, 1e, 1f, 1i, and 1j.

iv. Lee’s client device information

Petitioner maps Lee’s client device information to the claimed UCI and contends this satisfies elements 1d, 1e, 1f, 1i, and 1j. Pet. 25–32, 42, 47–48, 50–51; *see also* Pet. Reply 25–26 (summarizing relevant portions of Petition). Patent Owner argues that this mapping is deficient because: (1) client device information fails to qualify as UCI, (2) Petitioner does not allege that client device information is “retrieve[d]” or used to “control provision” of the service, as required by elements 1d and 1e, and (3) Petitioner does not show that client device information is “update[d],” as required by element 1f. PO Resp. 48–55; PO Sur-reply 27–31.

Having considered the parties’ arguments and evidence, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that Lee’s usage history teaches the claimed UCI, and Lee thereby teaches or suggests elements 1d, 1e, 1f, 1i, and 1j.

Lee’s client device information (also called “device character information”) includes a list of “media codecs” playable by the client device as well as “CPU capability, display size, bit transmission rate, media

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playable time, [and] network bandwidth.” Ex. 1004 § 3.2; *see also id.* § 2.2.2. Lee’s client device determines its information (*id.* § 2.2.2) and sends it to the server when requesting connection (*id.* §§ 2.2.2, 2.2.3). The client device information is received by the server’s User Manager (*id.* § 2.4.3), which stores the “user ID, password, and device information” in the Mapping Table (*id.* § 2.4.2). Lee states that this Mapping Table “manages client device information,” and a separate Active User Table that “manages information on the currently connected user.” *Id.* Lee’s server uses the client device information to divide the recommended content list into “playable and unplayable content” before sending that list to the client (*id.* §§ 3.1–3.2) and to determine whether the current client can resume streaming content previously played on a different device (*id.* § 3.9).

From this, we find that Lee’s server stores and maintains, for each user, client device information for the devices used by the user to login to the service. *See, e.g.,* Ex. 1004 § 2.4.2 (“The User Manager manages the Mapping Table that stores the user ID, password, and device information,” and it handles a separate “Active User Table that manages information on the currently connected user.”). Indeed, Lee’s goal is to be able to stream content to any of a user’s devices. *See id.* §§ 1 (indicating that the version of content is selected based on device character information so that “users are assured of seamless access to the streamed content even if they switch to another different client on the home network”), 4 (similar). We find that Lee’s server “retrieve[s]” a user’s client device information and “control[s] provision” of the service based on it, satisfying elements 1d and 1e. *See id.* §§ 3.1–3.2, 3.9.

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We further find that an ordinarily skilled artisan would have understood Lee to “update” the user’s client device information based on the provision of Lee’s service, satisfying element 1f. In particular, Lee teaches that the client device sends its information each time it connects to the server (Ex. 1004 § 2.2.3), and we find that an ordinarily skilled artisan would have understood this to mean that Lee updates the client device information at least when a new device is used or when a previously-used device’s information has changed. Indeed, Lee’s client device information includes data that changes, such as “media codec,” “display size,” and “network bandwidth.” *Id.* § 3.2; *see also* Ex. 1041, 155:10–14 (explaining that a user could install new codecs on a device), 156:5–19 (explaining that the display resolution could change), 163:11–164:9 (explaining that network bandwidth could change). From this, we find that Lee teaches that the server updates the client device information associated with the user to include the correct information for the device after login.

In addition, we find that Lee teaches retrieving updated client device information and controlling provision of its service based on the updated information, satisfying elements 1i and 1j. *See also, e.g.*, Ex. 1004 § 3.9, Fig. 5. Lee states that storage of the client device information in the server’s Mapping Table “mak[es] it possible to know the media codec of the multimedia content that had been sent via streaming to client 2 or to know if the CPU or the display can handle the playback,” and if playback is not possible, “client 2 will be informed or will be given a recommendation on other playable content in a created content list.” *Id.* § 3.9. Also, we are persuaded that an ordinarily skilled artisan would have understood Lee to describe a system that can be used to stop and restart content playback

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multiple times on different devices, as explained above. *See supra* § II.E.1.b.iii (addressing user conditions, i.e., stop points).

Patent Owner’s contrary arguments are unavailing. *See* PO Resp. 48–55; PO Sur-reply 27–31.

First, Patent Owner argues that client device information does not qualify as UCI because it “consists of static information about [the] device” and it is not “associated with the user (rather than the currently connected device itself)” or “used to configure anything.” PO Resp. 49–51. We disagree. As explained above, we agree with Petitioner (*see also* Pet. Reply 26–27) that Lee’s client device information is associated with the user, is used to configure the recommended content list, and is not static. *See* Ex. 1004 §§ 2.4.2, 3.2; *cf.* Tr. 116:15–17 (conceding that the client device information “certainly corresponds to the user when they bring it into the mapping table”). We give no weight to Dr. AlRegib’s testimony to the contrary (Ex. 2018 ¶¶ 72, 75, 76). In his direct testimony, Dr. AlRegib testifies that “Lee’s client device information consists of static information about a device,” but on cross-examination, he admitted that at least three of the types of information identified by Lee as client device information are *not* static. *See* Ex. 1041, 155:10–14, 156:5–19, 163:11–164:9 (*cited in* Pet. Reply 27). Patent Owner does not reconcile this inconsistency. *See* PO Sur-reply 27–29. Ultimately, we find that Lee’s client device information is information, related to a user, that is used for configuration. *See supra* § II.C (identifying construction of UCI). Thus, Lee’s client device information teaches UCI.

Second, Patent Owner argues that the Petition fails to allege that Lee’s server “retrieve[s]” client device information and “control[s]” provision of

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the service using it, as required by elements 1d and 1e. PO Resp. 51–53 (citing Pet. 29–33). We disagree. *Accord* Inst. Dec. 19–21 (summarizing the Petition as expressly including those contentions). In connection with element 1d, the Petition: submits that UCI (including the client device information) is stored at the server; contends that an ordinarily skilled artisan “would have understood that UCI should be retrieved before it can be used” by the server; and references the discussion of element 1e. Pet. 29; *see also id.* at 25 (mapping UCI to client device information), 26–28 (asserting that Lee’s server stores this information). In connection with element 1e, the Petition explains how the client device information is used by the server to control provision of the service (*id.* at 30–32), and it specifically explains that Lee’s server divides a recommended content list into categories based on the client device information (*id.* at 32). Although Patent Owner criticizes the Petition as failing to provide sufficient explanation for one of its quotes (*see* PO Resp. 52–53 (citing Pet. 30–31)), we do not agree that additional explanation of this quote is required.²⁴ The Petition’s contentions are clear (*accord* Inst. Dec. 21), and as explained above, we agree with Petitioner on these points. We have reviewed the cited portions of Dr. AlRegib’s testimony (Ex. 2018 ¶¶ 77–78), but we assign little to no weight to this testimony for the reasons addressed below. *See infra* § II.E.1.c.

²⁴ Patent Owner appears to contend that a sentence in Lee—which states that Lee’s server “implement[s]” the service based on client device information—does not, by itself, show that Lee teaches that its server “control[s] provision” of its service based on that information. PO Resp. 52–53 (quoting Ex. 1004 § 3). This argument misses the mark. We need not decide whether this sentence in isolation would have been sufficient because we instead consider Lee’s entire disclosure. We do find, however, that this sentence lends support to Petitioner’s contentions.

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Third, Patent Owner argues that Lee does not teach “updat[ing]” the client device information “based on the provision of the media content streaming service,” as required by element 1f. PO Resp. 53–55. In support, Patent Owner argues:

Petitioner argues that the user logging in to the system from a client device is “the first step in providing the media content streaming service.” This is a curious interpretation, given that Petitioner earlier argues that the streaming of content itself constitutes the provision of media content streaming service. Further, neither Petitioner nor its expert attempts to explain how receiving login information is “the first step in providing the media content streaming service,” and a [person of ordinary skill in the art] would not understand either Lee or the ’938 Patent to disclose or suggest this.

Moreover, this interpretation cannot be squared with the claim language itself . . . According to the structure of the claim, provision of the media content service is controlled based on the UCI, and the UCI cannot be retrieved until the user has logged in. Then the UCI must be updated based on the provision of the media content streaming service. Under Petitioner’s formulation, the alleged UCI (client device information) is updated at login, before provision of any media content streaming service. This interpretation is inconsistent with the limitations of the claims.

PO Resp. 53–55 (quoting Pet. 42; citing Pet. 30; Ex. 2018 ¶¶ 80–81). These arguments are unavailing.

We disagree with Patent Owner’s suggestion (*see* PO Resp. 53–54) that the Petition’s contentions are in conflict or insufficiently explained. *See, e.g.*, Pet. 30–36, 42; *see also* Pet. Reply 29. Petitioner maps the “provision of the media content streaming service” to the provision of Lee’s service, and we agree with Petitioner that this includes the login interface. *See, e.g.*, Pet. 30, 42; *see also supra* § II.C (explaining that “provision of the

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media content streaming service,” as recited by the claim, is not limited to streaming). Patent Owner does not explain why (or even clearly contend that) Petitioner’s contention is wrong. Patent Owner’s conclusory assertion that an ordinarily skilled artisan would have a different understanding of Lee (*see* PO Resp. 54 (citing Ex. 2018 ¶ 80)) is not sufficiently explained or supported, and Patent Owner’s reliance on Dr. AlRegib’s conclusory assertion is unavailing. *See* Ex. 2018 ¶ 80; 37 C.F.R. § 42.65(a) (conclusory testimony is entitled to little or no weight).

Patent Owner’s arguments regarding “the structure of the claim” (PO Resp. 54–55) also are insufficiently explained, but appear to be premised on the errors previously addressed. In addition, to the extent Patent Owner assumes that the claim limitations must be performed in the order recited, this assumption is misplaced.²⁵ *See Mformation Techs., Inc. v. Research in Motion Ltd.*, 764 F.3d 1392, 1398 (Fed. Cir. 2014).

Finally, in its Sur-reply, Patent Owner appears to advance new arguments that are not responsive to the arguments in Petitioner’s Reply, and such arguments are untimely and forfeited. *See supra* § II.A. But, even if these arguments had been timely presented, they would not have been persuasive. In particular, to the degree Patent Owner argues that Lee’s client device information is stored on the client *rather than* the server (*see* PO Sur-reply 27), we disagree. *See, e.g.*, Ex. 1004 § 2.4.2 (disclosing that the server’s Mapping Table stores the client device information). In addition, Patent Owner’s argument that UCI must be unique to the user (PO Sur-reply 28–29) is unavailing, as explained above. *See supra* § II.C (addressing

²⁵ Patent Owner does not expressly contend that the claim requires performance in the order recited. *See* PO Resp. 54; PO Sur-reply 30–31.

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construction of UCI). Patent Owner also advances additional arguments regarding its understanding of the claim and associated antecedent basis errors (*see* PO Sur-reply 30–31), but these arguments are insufficiently explained. Moreover, the arguments appear to be premised on an understanding of claim 1 that conflicts with the requirements of one of its dependent claims, which further specifies that the user configuration information “identif[ies] content reproduction capabilities corresponding to the first computing device and the second computing device.” Ex. 1001, 16:58–62 (claim 10). As noted below, we agree with Petitioner that Lee teaches (or at least suggests) this. *See* 1335-Pet. 62–64; *infra* § II.E.7 (addressing claim 10).

Accordingly, for these reasons, we find that Lee’s client device information teaches the claimed UCI, and Lee thereby teaches or suggests elements 1d, 1e, 1f, 1i, and 1j.

c. Evidence Not Relied Upon

There are three categories of evidence that we do not rely upon in this Decision. First, we do not rely upon the testimony of Mr. Gray, as explained above. *See supra* § II.B.2.

Second, we do not rely upon the portions of Dr. AlRegib’s testimony that address his understanding of the Petition or the sufficiency of Petitioner’s contentions. We find his testimony on these matters to be unhelpful because Dr. AlRegib is a technical expert (*see* Ex. 2018 ¶ 1). Also, we do not credit Dr. AlRegib’s conclusory assertions that particular claim terms have a particular meaning. *E.g.*, Ex. 2018 ¶ 44; *see Phillips*, 415 F.3d at 1318 (stating that “conclusory, unsupported assertions by experts as to the definition of a claim term are not useful”); *cf. id.*

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(explaining that expert testimony can be helpful “to provide background on the technology at issue, to explain how an invention works, to ensure that the court’s understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field”). We have, however, considered all of Dr. AlRegib’s cited testimony regarding technical matters, such as Lee’s disclosure and an ordinarily skilled artisan’s knowledge and understanding. But, where his testimony includes only a conclusory assertion, we have given little to no weight to it. *See* 37 C.F.R. § 42.65(a) (conclusory testimony is entitled to little or no weight); *cf. TQ Delta, LLC v. Cisco Sys., Inc.*, 942 F.3d 1352, 1358–59 (Fed. Cir. 2019) (“Conclusory expert testimony does not qualify as substantial evidence.”).

Third, we do not rely upon the parties’ arguments regarding Patent Owner’s contentions in district court, and we do not rely on Patent Owner’s infringement contentions. Petitioner submits that those contentions show that Patent Owner is taking contradictory positions (*e.g.* Pet. Reply 3), but even without considering this evidence, Petitioner has shown that Lee teaches or suggests each limitation of claim 1.

d. Conclusion

For the reasons provided above, we are persuaded that each limitation of independent claim 1 is either taught or suggested by Lee. We are also persuaded that, an ordinarily skilled artisan would have found it obvious, in view of Lee’s teachings, to arrive at the subject matter recited in claim 1. Accordingly, we conclude that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 1 would have been obvious over Lee.

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2. Independent Claims 23 and 27

Independent claims 23 and 27 include limitations that are commensurate with limitations found in independent claim 1, and Petitioner largely relies on its prior analysis for these claims. *See* Pet. 72–73; 1334–Pet. 73–74.

Patent Owner’s arguments regarding claim 1 apply equally to claims 23 and 27, but those arguments are not persuasive for the reasons explained above. *Supra* § II.E.1.b; *see* PO Resp. 25, 60; *see also* PO Resp. 9 (stating that these claims are “similar in scope . . . at least for purposes of this Response”). Patent Owner does not otherwise dispute Petitioner’s arguments, analysis, or evidence for claims 23 or 27. *See* PO Resp.

For the reasons provided for claim 1, we are persuaded that Petitioner has shown, by a preponderance of the evidence that the subject matter of independent claims 23 and 27 would have been obvious over Lee.

3. Independent Claim 30

Claim 30 recites limitations similar to those found in independent claim 1, but it also includes nine means-plus-function limitations. *See* PO Resp. 25; *accord* Inst. Dec. 12–13. Those limitations are:

- “means for receiving login information corresponding to a first user”;
- “means for identifying the first user based on the login information”;
- “means for retrieving user configuration information corresponding to the first user”;
- “means for controlling provision of a media content streaming service to a first electronic device based on the user configuration information corresponding to the first user”;

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- “means for updating the user configuration information corresponding to the first user based on the provision of the media content streaming service to the first electronic device”;
- “means for receiving login information corresponding to the first user from a second electronic device”;
- “means for identifying the first user based on the login information received from the second electronic device”;
- “means for retrieving the updated user configuration information corresponding to the first user”; and
- “means for controlling provision of the media content streaming service to the second electronic device based on the updated user configuration information corresponding to the first user.”

Each of these phrases begin with the words “means for,” so there is a presumption that these are means-plus-function limitations. *See Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015) (en banc) (holding that “use of the word ‘means’ creates a presumption that § 112, ¶ 6 applies”). Neither party contends that this presumption has been overcome (*cf.* Pet. 74–75; PO Resp. 25; Pet. Reply), and we do not discern structure in the claim limitations themselves overcomes this presumption. Thus, we conclude that these nine limitations are means-plus-function limitations.

However, the Petition fails to identify corresponding structure in the Specification for each of these limitations, as required by our rules. *See* 37 C.F.R. § 42.104(b)(3) (requiring a petition to “identify the specific portions of the specification that describe the structure, material, or acts corresponding to each claimed function”); PO Resp. 60–61; *accord* Inst. Dec. 13–14. The Petition includes a conclusory assertion that “the claimed functions” are performed by personal electronic devices and local networked devices. *See* Pet. 17–18 (citing Ex. 1001, 4:30–57, 5:31–35, 7:32–8:19,

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13:42–14:12), 74. At best, this identifies structure that performs *all* recited functions collectively, but not the *specific portions* of the Specification that describe the corresponding structure for *each* function.²⁶ Thus, we determine that the Petition fails to comply with Rule 42.104(b)(3).

As a result, we determine that Petitioner has not shown that claim 30 is unpatentable. *See* PO Resp. 61; *accord* Inst. Dec. 14 & n.8, 27. Moreover, at the oral hearing, Petitioner conceded this claim. Tr. 38:5–7; *see also* Pet. Reply (not addressing Institution Decisions determination that Petitioner had not shown a reasonable likelihood of success). Accordingly, we conclude that Petitioner has not shown, by a preponderance of the evidence, that claim 30 is unpatentable.

4. *Dependent Claim 6*

Claim 6 depends from independent claim 1 and further recites “at least one of the plurality of computing devices is configured to *dynamically develop* the user configuration information corresponding to the first user based on the provision of the media content streaming service to the first computing device.” Ex. 1001, 16:34–39 (emphasis added).

Petitioner contends that Lee teaches or suggests the additionally-recited limitations of dependent claim 6. Pet. 57–59. Petitioner points to the four types of UCI identified for independent claim 1 and argues that each “is dynamically developed because it is updated automatically during the provision of the streaming service.” *Id.* at 57–58 (referencing discussion of

²⁶ Even if we were to rely on Mr. Gray’s testimony, it would be unavailing because it suffers from the same deficiencies as the Petition. *See* Ex. 1003 ¶¶ 62, 265; *see also id.* ¶¶ 59–61, 63.

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element 1f). In support, Petitioner specifically points to usage history and user conditions (i.e., stop points). *Id.* (citing Ex. 1004 §§ 2.2.1–2.2.3, 2.4.2, 3.6–3.8, 4, Fig. 5).

Patent Owner disagrees. PO Resp. 62–64. According to Patent Owner, claim 6 “requires more” than a showing that UCI is updated automatically because claim 1 already requires an automatic update. *Id.* at 62–63. Patent Owner also argues that “Petitioner’s interpretation” is inconsistent with the dictionary meaning of “dynamically.” *Id.* at 63 (citing Ex. 2021, 339; Ex. 2022, 359; Ex. 2023, 219; Ex. 2018 ¶ 98). Although Patent Owner does not propose a construction for the term “dynamically,” it faults Petitioner’s examples for “at most, recording changes after provision of the content has stopped.” *Id.*; *see also* Tr. 118:18–120:13 (discussing the meaning of the term without providing clarification).

Having considered the parties’ arguments and evidence, we are persuaded that Lee teaches dynamically developing both its usage history and its stop points. *See supra* § II.E.1.b.ii–iii (summarizing Lee’s teachings regarding usage history and stop points). For the reasons previously explained, we find that Lee automatically updates usage history and stop points and makes changes to this UCI as needed and appropriate given the use of the system. *Accord* Ex. 2023, 219 (defining “dynamic” as “[d]ependent on changing conditions or parameters” and “[i]n computers, an action or process which occurs when needed”).

Patent Owner’s contrary arguments are largely premised on its erroneous assumption that claim 1 requires automatic updates. *See* PO Resp. 62–63; PO Sur-reply 31. We explained why this assumption is incorrect in connection with claim 1. *Supra* § II.E.1.b.i (addressing user

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preferences). Patent Owner also points vaguely to dictionary definitions and faults Lee for recording changes after streaming has stopped, but fails to identify anything that is required by the claim and missing from Lee. *See* PO Resp. 63. Finally, although we have considered the cited portions of Dr. AlRegib’s testimony (*see* Ex. 2018 ¶¶ 94–98), we do not credit this testimony because Dr. AlRegib does not discuss matters within his technical expertise (*see supra* § II.E.1.c).

Accordingly, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 6 would have been obvious over Lee.

5. *Dependent Claims 7–9 and 25*

Claim 7 depends from independent claim 1 and further recites “the user configuration information corresponding to the first user includes *media consumption settings including at least video and audio presentation preferences* corresponding to the first computing device and the second computing device.” Ex. 1001, 16:40–45 (emphasis added). Claim 8 depends from claim 7 and further recites “at least one of the plurality of computing devices is configured to control provision of the media content streaming service to the first computing device and the second computing device *based on the media consumption settings* corresponding to the first computing device and the second computing device.” *Id.* at 16:46–52 (emphasis added). Claim 9 depends from claim 8 and further recites “the media consumption settings corresponding to the first computing device *are different* than the media consumption settings corresponding to the second computing device.” *Id.* at 16:53–57 (emphasis added). Claim 25 depends

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from independent claim 23 and recites limitations commensurate with those required by claim 9. *Compare id.* at 16:40–57, *with id.* at 18:45–60.

Petitioner contends that Lee teaches the additionally-recited limitations of these dependent claims and, in support, relies upon its contention that Lee’s client device information teaches the claimed UCI. Pet. 59–63, 73–74. In particular, Petitioner submits that “media codec, CPU capability, [and] display size” are “video and audio presentation preferences because Lee explains that they are used to determine the audio/video content playback capabilities of the client device.” *Id.* at 59–60 (citing Ex. 1004 §§ 2.2.2, 3.2, 3.9–3.10). Petitioner further contends that the provision of the service is based on these media consumption settings “because they are used to present different content lists and playback behavior to the same user on different clients depending on the device information specific to each client.” *Id.* at 61–62 (citing Ex. 1004 §§ 1, 3.2, 4; also referencing discussion of claim 1). Finally, Petitioner contends that Lee teaches that the settings for each client device are different. *Id.* at 62–63 (citing Ex. 1004 §§ 2.2.2, 3.9).

Patent Owner argues that Lee fails to teach “media consumption settings including at least video and audio presentation preferences,” as required by claim 7. PO Resp. 64–68. First, Patent Owner contends that Lee’s “client device information is static information describing the character of the client device,” whereas “*media consumption settings clearly constitute user preferences* regarding media consumption, not immutable character device information.” *Id.* at 65 (emphasis omitted and added) (citing Ex. 1001, 7:60–63). Second, Patent Owner submits that Petitioner points to the same information from Lee to also teach “information

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identifying content reproduction capabilities,” as recited in dependent claim 10, and Patent Owner contends that “[t]he same information cannot read on both claim terms.” *Id.* at 66 (citing 1335-Pet. 62). On this basis, Patent Owner argues that Petitioner has not shown claim 7 to be unpatentable, and consequently fails to show unpatentability of claims 8 and 9 (which depend therefrom) and claim 25 (which includes substantially similar limitations). *Id.* at 66–68.

Having considered the parties’ arguments and evidence, we are persuaded that Lee teaches that the client device information includes “media consumption settings including at least video and audio presentation preferences,” as required by claim 7. As noted above, Lee expressly states that its client device information identifies media codecs and display size (*e.g.*, Ex. 1004 § 3.2), and we are persuaded that an ordinarily skilled artisan would have understood this information to identify the codec that the server should use when streaming to the device and preferences for display size. *See id.* § 3.9; *see also* Pet. 60. In particular, we find that Lee’s media codecs and display size teach the claimed media consumption settings.

Patent Owner’s contrary arguments are unavailing. First, Patent Owner erroneously assumes that Lee’s client device information is “static” or “immutable” (*see* PO Resp. 65; PO Sur-reply 32); however, as explained above, Lee’s client device information (particularly “media codec” and “display size”) are *not* static. *See supra* § II.E.1.b.iv.

Second, Patent Owner argues that “media consumption settings” are “user preferences regarding media consumption” (*see* PO Resp. 65 (quoting Ex. 1001, 7:60–63); *see also id.* at 67 (repeating that Lee fails to teach “media consumption settings” for claims 8 and 9)), but we disagree. Patent

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Owner relies on a passage from the '938 patent, which provides several examples of “media consumption settings”:

For example, the user configuration information may specify various user specific device operational preferences, comprising favorite broadcast channels and/or website, favorite games, game status information, and media consumption settings. *Exemplary media consumption settings may comprise file types and/or video or audio presentation preferences, website access information, user interface configuration preferences, and/or directory information.*

Ex. 1001, 7:56–63 (emphasis added to the sentence quoted by Patent Owner). These examples do not define media consumption settings, and they do not support an argument that those settings mean “user preferences.” *See id.* at 7:60–63. Indeed, the prior sentence lists user “favorite[s]” as a different category from “media consumption settings.” *Id.* at 7:56–60. As with UCI, the Specification uses the term “media consumption settings” broadly, and we discern no support in the intrinsic record for limiting these settings to a “user preference,” as Patent Owner contends. Dr. AlRegib provides a conclusory assertion agreeing with Patent Owner (*see* Ex. 2018 ¶ 102), but we assign little weight to that testimony. *See* 37 C.F.R. § 42.65(a).

Third, Patent Owner assumes that Lee’s device character information cannot teach different limitations in claims 7 and 10, but we discern no basis for this contention. A single claim is sometimes construed to require different components for separate limitations. *See, e.g., Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010). *But see, e.g., Powell v. Home Depot U.S.A., Inc.*, 663 F.3d 1221, 1231 (Fed. Cir. 2011) (distinguishing *Becton*). But we discern no reason to conclude that limitations in *different* claims must be satisfied by different components.

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Finally, we are persuaded by Petitioner’s undisputed contentions regarding the remaining limitations of these claims. *See also supra* § II.E.1.b.iv (summarizing Lee’s teaching regarding client device information). Accordingly, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claims 7–9 and 25 would have been obvious over Lee.

6. *Dependent Claims 17 and 18*

Claim 18 depends from claim 1 and further recites:

at least one of the plurality of computing devices is configured to control provision of the media content streaming service to the first computing device and the second computing device *from a server remote from the system, the first computing device and the second computing device.*

Ex. 1001, 17:47–53 (emphasis added). Claim 17 also depends from claim 1 and includes similar requirements, except that in place of the remote server required by claim 18, it requires “a third system^[27] communicatively coupled to the system via a network.” *Id.* at 17:41–46.

Petitioner contends that Lee teaches the additionally-recited limitations of dependent claims 17 and 18. Pet. 63–68. Specifically, Petitioner contends that Lee’s home server is configured to control provision

²⁷ The District Court concluded that “a third system” is indefinite because “it is unclear if the ‘third system’ is a ‘third device’ or actually a ‘third system.’” Ex. 1029, 59–60. Our analysis of this claim limitation would be the same whether we considered the “third system” to be a third system or a third device. Accordingly, we determine that we can evaluate Petitioner’s contentions regarding claim 17. *See Intel Corp. v. Qualcomm Inc.*, 21 F.4th 801, 812–13 (Fed. Cir. 2021) (“[I]t is not always impossible to adjudicate a prior-art challenge, one way or the other, just because some aspect of a claim renders the claim indefinite.”).

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of the service (e.g., by providing a recommended content list and streaming content using that list) to clients 1 and 2 from an external server. *Id.* at 63–64. Petitioner submits that Lee’s external server is the source of the content and provides it to the home server, which in turn controls streaming of content to the client devices. *Id.* at 64–65 (citing Ex. 1004 § 1, Fig. 1). Petitioner also contends that Lee’s external server qualifies as both the remote “server” recited in claim 17 and the “third system” recited in claim 18. *Id.* at 65, 67–68.

Patent Owner disputes Petitioner’s showing for these claims. PO Resp. 68–77. According to Patent Owner, Lee “teaches that all content to be streamed is first stored on the home server, and then streamed from the home server to the client devices.” *Id.* at 69–71 (citing Ex. 1004 §§ 1, 2; Ex. 2018 ¶¶ 112–115); *see also id.* at 71–76 (Ex. 1004, Figs. 3, 5; Ex. 2018 ¶ 116; Ex. 2019, 22:24–27:25). Patent Owner contends that Petitioner’s summary of Lee “is a red herring” (*id.* at 69) because it “merely establishes that the external server provides (but not that it streams) content to the home server, and the content is streamed to the client devices from the home server” (*id.* at 76 (emphasis omitted)).

In Reply, Petitioner states that “Lee’s home server streams content—but it must obtain that content from somewhere,” namely the external server. Pet. Reply 37. Petitioner contends that “Lee’s home server controls provision of the media content streaming service from the external server (where the content originates) to the client devices.” *Id.* at 38. Petitioner further argues that Patent Owner’s arguments fail to distinguish Lee from the claim limitations:

[Patent Owner] assumes, without any reasoning or support, that the claimed “provision of the media content

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streaming service” cannot include providing content for the service. [Patent Owner] is incorrect. . . . Nothing in the claims precludes the service from using an external server where content originates. Nothing precludes the content from being stored/cached/buffered on a home server.

Id.

In Sur-reply, Patent Owner argues that “[t]he reasoning of the Reply rebuts itself” and contends that “Lee would have to disclose streaming from the external server to the client devices” in order to satisfy the claim language. PO Sur-reply 33. Patent Owner also argues that Petitioner’s argument “flies in the face of any known definition of streaming (which generally is taken to mean sending a file progressively to a client while the client is playing the file).” *Id.*

Having considered the parties’ arguments and evidence, we are persuaded that Lee teaches these claims’ additionally-recited limitations.

There appears to be no dispute regarding the relevant aspects of Lee’s disclosure. *See, e.g.*, Pet. 64–65; PO Resp. 69–70. Lee teaches that its external server is the source of the multimedia content that is ultimately streamed to the client devices. *See* Ex. 1004 § 1, Fig. 1. Lee’s home server acquires the content from the external server, and the home server controls provisioning of the service by providing a recommended list of content and streaming content to the client devices using that list. *See, e.g., id.* § 1. Lee stores (or caches) at least some of the content on the home server before streaming it to the client devices. *See, e.g., id.* at Fig. 3 (showing a “Contents DB”).

However, the parties disagree on whether this satisfies the claim limitations. Patent Owner’s Response contends that Petitioner’s showing “merely establishes that the external server provides (but not that it streams)

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content to the home server, and the content is streamed to the client devices from the home server.” PO Resp. 76. In its Reply, Petitioner argues that this argument is premised on an erroneous understanding of the claims’ scope (Pet. Reply 38), and Patent Owner does not directly respond to this argument in its Sur-reply (*see* PO Sur-reply 32–33). Instead, Patent Owner argues that, to teach the claim, “Lee would have to disclose streaming from the external server to the client devices” (PO Sur-reply 33), and Patent Owner submits that it understands the claim to prohibit use of a caching server between the external server and the client devices (Tr. 92:15–93:2).²⁸

In our view, Lee’s disclosure satisfies the claim limitations. The disputed claim language is not the picture of clarity, and the intrinsic record does not clarify it (*see* Tr. 91:21–92:1); however, we understand the claim language to require that a computing device control provision of the claimed service to the claimed first and second computing devices, and at least some portion of that service comes from a remote server (or a third system).²⁹ Ex. 1001, 17:41–53. We are persuaded that Petitioner has shown that Lee teaches this. *See* Pet. 63–68; Pet. Reply 37–38. Lee’s home server controls provision of the service to client 1 and client 2, and at least some portion of the service (namely, content) comes from a remote server (or a third

²⁸ We specifically invited each party to address the construction of this claim at the oral hearing. *See* Tr. 89:4–93:2, 111:1–16.

²⁹ Claim 1 recites a “system” that controls provisioning of the service to the first and second computing devices (Ex. 1001, 15:53–55, 15:60–63, 16:8–11), and claims 17 and 18 require that “at least one of the plurality of computing devices is configured to control provision” of the service to the first and second devices (*id.* at 17:41–45, 17:47–51). Notably, claims 17 and 18 do not use antecedent basis to indicate that the control referenced in these claims is the same as the control recited in claim 1.

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system). We also agree that Lee’s external server qualifies as the remote “server” recited in claim 17 and the “third system” recited in claim 18. *See* Pet. 65, 67–68.

Patent Owner’s contrary arguments are vague and unsubstantiated. *See* PO Resp. 68–77; PO Sur-reply 33. We understand Patent Owner to impliedly seek to construe these claims to require that the remote server *directly stream content* to the client devices; however, we discern no basis for imposing such a requirement on the claims. As we previously explained, Patent Owner’s arguments are at least partially premised on an erroneous assumption that claims are limited to streaming. *See supra* § II.C. Moreover, the claim does not preclude content from being cached on Lee’s home server after it is received from the external server and before it is provided to the client devices.

Accordingly, we are persuaded that Petitioner has shown, by a preponderance of the evidence that the subject matter of claims 17 and 18 would have been obvious over Lee.

7. Dependent Claims 2–4, 10, 11, 13–15, 19–22, 24, and 28

Claims 2–4, 10, 11, 13–15, and 19–22 depend from independent claim 1. Ex. 1001, 16:12–26, 16:58–17:3, 17:15–30, 17:54–18:11. Claim 24 depends from independent claim 23 (*id.* at 18:37–44), and claim 28 depends from claim 27 (*id.* at 19:38–46).

Petitioner contends that the subject matter of each these claims is rendered obvious by Lee because Lee teaches and/or suggests each claim’s additionally-recited limitations. Pet. 54–71, 73–74; 1334-Pet. 58–72, 75–76; 1335-Pet. 62–68, 72–78. Patent Owner does not dispute these contentions. *See* PO Resp. Having considered the entire record, we are persuaded that

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Petitioner has shown that each limitation of claims 2–4, 10, 11, 13–15, 19–22, 24, and 28 is taught or suggested by Lee.

As for claim 2, we are persuaded by Petitioner’s undisputed arguments that Lee’s home server and client devices are distinct devices that communicate over the home network. *See* Pet. 54–56; *see also, e.g.*, Ex. 1004 § 1 (“The home server . . . implements data streaming in various formats to various multimedia clients on a home network through wired or wireless protocols . . .”).

As for claims 3, 4, 24, and 28, we are persuaded by Petitioner’s undisputed arguments that, when a user logs on for the first time, Lee’s server receives the user profile from client 1 and generates user configuration information based on that user profile. *See* 1334-Pet. 58–66, 72, 75–76; *see also* Ex. 1004 §§ 2.1, 3.1, Figs. 5, 6*; *supra* § II.E.1.b.i (finding that Lee’s user preferences teach the claimed user configuration information).

As for claims 10 and 11, we are persuaded by Petitioner’s undisputed arguments that Lee’s server stores client device information (e.g., media codec, CPU capacity, and display size) for client 1 and client 2 and controls provision of the service to the appropriate client based on the client’s capabilities. *See* 1335-Pet. 62–64, 66–67; *see also* Ex. 1004 §§ 3.2, 3.9; *supra* § II.E.1.b.iv (finding that Lee’s client device information teaches the claimed user configuration information).

As for claims 13, 14, and 15, we are persuaded by Petitioner’s undisputed arguments that Lee’s server identifies bit transmission rate and network bandwidth (which each teach the claimed “connectivity related information” that includes “bandwidth level”) and determines whether

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content is playable on a client based on that information. *See* 1335-Pet. 72–75, 77; *see also* Ex. 1004 §§ 3.2, 3.9.

As for claims 19 and 20, we are persuaded by Petitioner’s undisputed arguments that Lee’s user configuration information identifies preferred categories of content and that Lee’s home server controls provision of its service to client device 1 and client device 2 based on those preferred categories. *See* Pet. 68–69; *see also supra* § II.E.1.b.i (finding that Lee provides a recommended content list based on user preferences).

As for claim 21, we are persuaded by Petitioner’s undisputed arguments that, based on a user’s login information, Lee’s server selects the user configuration information corresponding to that particular user from a database that stores user configuration information for several users. *See* 1334-Pet. 66–72; *see also, e.g.*, Ex. 1004 §§ 2.4.2, 3.1, Fig. 4.

As for claim 22, we are persuaded by Petitioner’s undisputed arguments that Lee teaches or suggests updating the updated user configuration information (e.g., usage history and user conditions) based on the provision of the service. *See* Pet. 70–71; *see also* § II.E.1.b.iii (finding that Lee teaches and suggests repeating its process).

Accordingly, we conclude that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claims 2–4, 10, 11, 13–15, 19–22, 24, and 28 would have been obvious over Lee.

F. Obviousness Ground Based on Lee and Glance

Claim 5 depends from claim 1 and recites “at least one of the plurality of computing devices is configured to transmit at least a portion of the user configuration information corresponding to the first user to the first

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computing device upon identifying the first user based on the login information received from the first computing device.” Ex. 1001, 16:27–33.

Petitioner contends that the subject matter of dependent claim 5 would have been obvious over Lee and Glance. 1334-Pet. 76–87. In particular, Petitioner asserts that Lee teaches transmitting a recommended content list to client 1 after the user logs-on (*id.* at 85–86), and Petitioner asserts that Glance teaches organizing recommended content by genre (*id.* at 86 (citing Ex. 1016, 3:47–51, 4:5–13, 5:23–25)). From this, Petitioner contends that it would have been obvious to organize Lee’s recommended content list using Glance’s genre-specific recommendations to show content in the user’s favorite genres, which are part of the user’s preferences. *Id.* at 86–87; *see also id.* at 76–84 (arguing that an ordinarily skilled artisan would have been motivated to combine Lee and Glance in this way).

Patent Owner does not dispute Petitioner’s contentions, except as explained in connection with independent claim 1. *See* PO Resp. 77. Those arguments, however, are unavailing for the reasons explained above. *See supra* § II.E.1.b.

We are persuaded by Petitioner’s undisputed contentions that the Lee-Glance combination teaches the additionally-recited limitations of dependent claim 5. *See* 1334-Pet. 76, 85–87. In particular, Lee’s server: identifies a user (and the corresponding user configuration information) based on the user’s login information received from client 1, and Lee’s server then transmits a recommended content list to client 1. *See, e.g.,* Ex. 1004 § 3.1; *see also supra* § II.E.7 (addressing similar limitation in dependent claim 21). Lee also teaches that the user configuration information includes user preferences (*see also supra* § II.E.1.b.i), and Lee

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states that the recommended content list “is based on” that those preferences, including genre. *See, e.g.*, Ex. 1004 § 3.1. Glance teaches providing a recommended content list that is organized by genre. *See, e.g.*, Ex. 1016, 3:47–51, 5:23–25.

We are also persuaded that a person of ordinary skill in the art would have been motivated to implement Lee’s recommended content list by organizing Lee’s content recommendations by genre, as taught by Glance, in order to enhance the accessibility of Lee’s recommendations. *See* 1334-Pet. 76–84, 86–87. Indeed, Lee suggests such an organization by identifying accessibility as a goal and identifying specific genres. *See, e.g.*, Ex. 1004 §§ 1 (describing “intelligent recommendation[s] regarding the media content [users] want based on the user preferences stored on the home server” using preferences, including genres, so that “users themselves don’t have to search or manage the content that they want”), 2.5 (identifying specific genres for classifying user preferences). Moreover, Lee expressly suggests improving its technique by determining preferred content using automatically determined user preferences (*id.* § 4), and Glance describes a method for doing so (*e.g.*, Ex. 1016, code (57)). In addition, both Lee and Glance provide audio and video content recommendations to users using similar types of networked communication devices. *See, e.g.*, Ex. 1004 § 1; Ex. 1016, 2:37–41, 3:26–42. We are further persuaded that providing a genre-organized recommended content list to a user would have transmitted a portion of the user configuration information (i.e., the user’s preferred genres), as required by claim 5. *See, e.g.*, 1334-Pet. 86–87.

In sum, we are persuaded that a person of ordinary skill in the art would have been motivated to combine Lee and Glance, as proposed, and

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we are persuaded that each of the limitations of claim 5 would have been obvious over the Lee-Glance combination. Accordingly, we conclude that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 5 would have been obvious over Lee and Glance.

G. Obviousness Ground Based on Lee and Smith

Petitioner contends that the subject matter of claims 10–16, 26, and 29 would have been obvious over Lee and Smith. 1335-Pet. 62–82; *see also id.* at 20–27 (addressing motivation to combine). Patent Owner argues that a person of ordinary skill in the art would not have been motivated to combine Smith and Lee, as proposed by Petitioner, to yield the subject matter recited by claim 12 (PO Resp. 78–82) and that Petitioner’s contentions regarding claims 16, 26, and 29 have similar deficiencies (*id.* at 82–83).

1. Claims 10, 11, and 13–15

We have already found claims 10, 11, and 13–15 to be unpatentable (*see supra* § II.E.7), so we need not (and do not) address whether Petitioner has shown these claims to be unpatentable based on this ground. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding a petitioner “is entitled to a final written decision addressing all of the claims it has challenged”); *Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App’x 984, 990 (Fed. Cir. 2020) (non-precedential) (recognizing that the “Board need not address issues that are not necessary to the resolution of the proceeding” and, thus, agreeing that the Board has “discretion to decline to decide additional instituted grounds once the petitioner has prevailed on all its challenged claims”).

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2. *Claim 12*

Claim 12 depends from claim 11 and further recites “at least one of the plurality of computing devices is configured to control provision of the media content streaming service to the first computing device and the second computing device *by selecting a version of content, from a plurality of stored versions of content, to be streamed* to the first computing device or the second computing device *based on the information identifying content reproduction capabilities* corresponding to the first computing device or the second computing device.” Ex. 1001, 17:4–14 (emphases added).

For this claim, Petitioner relies on its analysis of claim 11, contending that Lee’s server is configured to control provision of the service based on a client device’s capabilities. 1335-Pet. 68–69; *see supra* § II.E.7 (addressing claim 11). Petitioner also contends that Smith teaches “pre-materializ[ing] alternate versions of the Internet content” that include the same content encoded at different resolutions and/or bit rates, storing these versions at a server, and selecting a version to deliver to a client based on the client’s device constraints. 1335-Pet. 70–71 (quoting Ex. 1017 § 2; citing Ex. 1017 §§ 2, 3.1, 4.1, 4.1.4). Petitioner proposes modifying Lee by storing alternate versions of content and selecting one of them for streaming, as taught by Smith, based on client device information. *Id.* at 69–71.

Patent Owner argues that an ordinarily skilled artisan would not have been motivated to make Petitioner’s proposed combination, but does not dispute Petitioner’s contentions that this combination would teach the limitations of this claim. *See* PO Resp. 77–82.

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a. Additionally-Recited Limitations

Lee's server stores client device information (e.g., media codec, CPU capacity, and display size) for client 1 and client 2 and controls provision of its service to the appropriate client based on the client's capabilities. *See, e.g.*, Ex. 1004 §§ 3.2, 3.9; *see also supra* § II.E.7 (addressing claim 11). Smith teaches storing multiple versions of content and selecting a particular version based on the client's capabilities. *See, e.g.*, Ex. 1017 §§ 2 ("The system can pre-materialize the alternate versions of the Internet content and store them at the server," allowing the system to "merely select[] the versions of the content to deliver to the client."), 4.1.3 (stating that a device's "display, storage and processing capabilities" are used to select a version of the content). We are persuaded that, in the combination of Lee and Smith proposed by Petitioner, Lee's home server controls provision of the service by selecting a version of content based on the client's capabilities. We are also persuaded by Petitioner's undisputed contention that this satisfies the requirements of claim 12. *See* 1335-Pet. 68–71.

b. Rationale to Combine

Petitioner submits that an ordinarily skilled artisan would have been motivated to combine Lee and Smith in the manner it proposes. 1335-Pet. 69–71 (citing *id.* at 20–27). According to Petitioner, "Lee seeks to provide a seamless streaming experience across devices," but notes that some client devices are unable to play certain content. *Id.* at 20 (citing Ex. 1004 §§ 1, 2, 3, 3.2, Figs. 3, 5). Petitioner contends that "Smith's teachings improve content compatibility by storing alternate versions of content and selecting a version based on constraints." *Id.* (citing Ex. 1017 §§ 2, 4.1.3, 4.1.4). Petitioner asserts that an ordinarily skilled artisan would

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have recognized that Smith would have furthered Lee’s goal of a “seamless” streaming system (and provided known advantages) “by increasing the likelihood the user’s client devices can playback content as the user switches between devices.” *Id.* at 21–22 (citing Ex. 1004 §§ 1, 3.9, 4, Abstr.; Ex. 1017 §§ 2, 3, 3.1, 4.1.3, 4.1.4). Petitioner further contends that Lee provides an express motivation to combine its techniques with known transcoding techniques. *Id.* at 22 (citing Ex. 1004 § 3.9). Petitioner also contends that an ordinarily skilled artisan would have been motivated to apply Smith’s pre-materialized teachings (rather than on-the-fly transcoding) because it would reduce computational burden at the server and because it was easier to store multiple versions of content than transcode them on-the-fly. *Id.* at 24–25 (citing Ex. 1017 § 2; Ex. 1032, 8:25–28). Finally, Petitioner points to various similarities between Lee and Smith (*id.* at 22–23, 25), and Petitioner asserts that an ordinarily skilled artisan would have had a reasonable expectation of success and that the combination was within the level of ordinary skill (*id.* at 25–27).

Patent Owner disagrees, arguing that a person of ordinary skill in the art “would find no reason to combine Smith with Lee in the way contemplated by Petitioner.” PO Resp. 78. Patent Owner explains that Smith “is generally directed to real-time transcoding of Internet content” and asserts that an ordinarily skilled artisan would have been motivated to use this preferred mode of operation instead of Smith’s pre-materialization mode. *Id.* at 78–80 (citing Ex. 1017, 1, 3, 4; Ex. 2018 ¶¶ 123–124). Patent Owner also argues that an ordinarily skilled artisan “would recognize that [Smith’s] pre-materialization mode nullifies many of the advantages of Smith’s disclosed system,” and Patent Owner contends that Lee’s home

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server “would have to store dozens of different versions of each piece of content.” *Id.* at 80–81 (citing Ex. 1017, 3–4; Ex. 2018 ¶¶ 125–126); *see also id.* at 79 (citing Ex. 2018 ¶ 123). Patent Owner further argues that a person of ordinary skill in the art would recognize that “storage [in a home server] is limited and generally at a premium, while client load is generally low.” *Id.* at 81 (Ex. 2018 ¶ 127); *see also id.* at 79 (citing Ex. 2018 ¶ 123). Finally, Patent Owner submits that its position is supported by Lee’s statement that a “transcoding module plugin” can be used to transcode media formats. *Id.* at 81 (quoting Ex. 1004 § 3.9).

Having considered the parties’ arguments and the evidence of record, we are persuaded that a person of ordinary skill in the art would have been motivated to combine Lee and Smith in the manner proposed by Petitioner, and would have had a reasonable expectation of success.

Initially, we note that Lee satisfies most of the limitations of claim 12, as explained above. *Supra* §§ II.E.1 (claim 1), II.E.7 (claims 10 and 11), II.G.2.a (claim 12). There is only one difference between the subject matter recited in this claim and Lee’s disclosure (*see Graham*, 383 U.S. at 17): claim 12 requires that a computing device be operable to control provision of the service “by selecting a version of content, from a plurality of stored versions of content,” for streaming to a client (Ex. 1001, 17:4–14), and Lee does not teach selecting a version of content for streaming from a plurality of stored versions (*see* Ex. 1004). Importantly, claim 12 does not require that *all* versions of content be stored on Lee’s home server, or that content to be streamed *always* be selected from multiple stored versions of it. *See* Ex. 1001, 17:4–14. As a result, the subject matter of claim 12 would have been obvious if a person of ordinary skill in the art would have been

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motivated to configure Lee's home server to be able to select a version of content from two stored versions of that content for streaming to a client based on that client's capabilities. Given the disclosures of Lee and Smith identified by Petitioner, we are persuaded that an ordinarily skilled artisan would have been motivated to combine Lee and Smith in this manner.

In particular, we agree that using Smith's pre-materialized content would have furthered Lee's goal of a seamless streaming system by increasing the likelihood the user's client devices can playback content as the user switches between devices. *See* Pet. 20–22. Lee seeks to provide a “seamless” service “that allows [a] user . . . to switch conveniently to another device or client without having to repeat [a] download [from] the beginning,” and to that end, Lee stores device character information for the user's client devices. Ex. 1004, Abstr; *see also id.* § 1 (“By implementing streaming based on user identification and device character information of many multimedia clients on the home network, users are assured of seamless access to the streamed content even if they switch to another different client on the home network.”). Lee recognizes that content may or may not be playable by a particular client device (*e.g., id.* §§ 1, 3.2), and Lee uses device information to determine whether a particular client device can play particular content (*id.* §§ 3.2, 3.9). Lee states that content may be able to be transcoded if the client is missing a particular codec (*id.* § 3.9), but does not explain how a seamless experience is ensured when a particular device cannot play content.

Smith teaches a method that also uses a device's capabilities and network conditions to supply a device with playable content. *E.g.,* Ex. 1017, §§ 2, 4.1; *also compare id.* § 4.1.3 (using a device's “processing

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capabilities” and “display” to select a version of the content), *with* Ex. 1004 § 3.2 (using a client device’s CPU capacity and display size to determine whether content is playable). Smith teaches that content can either be transcoded in real-time *or* “pre-materialize[d]” and stored at the server. Ex. 1017 § 2. We are persuaded that this would have motivated an ordinarily skilled artisan to implement Lee by (in some situations) storing two versions of content at the server because this would have allowed Lee to ensure a seamless experience for a user across the user’s devices. Indeed, the parties agree that pre-materialization was a known technique (*see* Pet. Reply 39–40; Ex. 1042, 401:5–402:7), and nothing indicates that implementing it in Lee’s server (by storing a second version of particular content) would have required anything other than the predictable exercise of ordinary skill in the art. *See KSR*, 550 U.S. at 416 (“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.”).

Moreover, we are persuaded that a person of ordinary skill in the art would have been motivated to combine Lee and Smith to select a stored version of content on Lee’s server because it would reduce computational burden at the server. *See* Ex. 1032, 8:25–28 (“[T]ranscoding can be a very long CPU intensive process.”); *see also* Ex. 1042, 410:22–412:22 (describing real-time transcoding and pre-materialization as “different” methods, but disagreeing that one is superior to the other). Although a disadvantage of storing multiple versions of content is that it would reduce the amount of storage space on the home server that might be used for different content (*see* PO Resp. 81), this is a predictable engineering tradeoff

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that would not have meaningfully diminished the ordinarily skilled artisan's motivation.

We do not agree with Patent Owner's contrary arguments because they are premised on an erroneous understanding of the claim's requirements. *See* PO Resp. 80–81 (arguing that the benefits of Smith's optimization would be lost in the proposed implementation, “the home server would have to store dozens of different versions of each piece of content,” and the home server would have limited storage). As explained above, claim 12 does not require that *all* versions of content be stored on Lee's home server, or that content to be streamed *always* be selected from the stored versions. *See* Ex. 1001, 17:4–14. Patent Owner erroneously assumes that Lee's server would be required to store versions of content to account for any situation, but neither the claim nor Petitioner's proposal requires this. Patent Owner similarly errs by assuming that the Lee-Smith combination could not use of transcoding to modify content when necessary or desirable. Ultimately, given Smith's disclosure, we are persuaded that it would have been obvious to implement Lee by storing two versions of a particular piece of content so that the home server can select a version playable by the user's device, and this satisfies the claim.

Also, Patent Owner's arguments that an ordinarily skilled artisan would have combined Lee and Smith in a *different* way from what Petitioner proposes (*see* PO Resp. 78–82) are largely misplaced. *See* Pet. Reply 38–40 (identifying legal errors in Patent Owner's arguments). The salient question is whether Petitioner's proposed combination would have been obvious, not whether it would have been the only obvious combination. Relatedly, Patent Owner's arguments that pre-materialization mode was “not Smith's

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preferred mode of operation” and was described in only two sentences (*see* PO Resp. 79–80; PO Sur-reply 34) are inapposite. *See, e.g., CRFD Research, Inc. v. Matal*, 876 F.3d 1330, 1348–49 (Fed. Cir. 2017) (“A reference must be considered for everything that it teaches, not simply . . . a preferred embodiment.” (quoting *In re Applied Materials, Inc.*, 692 F.3d 1289, 1298 (Fed. Cir. 2012))). Moreover, even if we agreed that real-time transcoding would have been better than pre-materialization (*see* PO Resp. 80–81), this would not cause us to question Petitioner’s rationale. *See Novartis Pharms. Corp. v. W.-Ward Pharms. Int’l Ltd.*, 923 F.3d 1051, 1059 (Fed. Cir. 2019) (“[O]ur case law does not require that a particular combination must be the preferred, or the most desirable, combination described in the prior art in order to provide motivation for the current invention.” (quoting *In re Fulton*, 391 F.3d 1195, 1200 (Fed. Cir. 2004))); *Dome Patent L.P. v. Lee*, 799 F.3d 1372, 1381 (Fed. Cir. 2015) (“[J]ust because ‘better alternatives’ may exist in the prior art ‘does not mean that an inferior combination is inapt for obviousness purposes.’” (quoting *In re Mouttet*, 686 F.3d 1322, 1334 (Fed. Cir. 2012))).

We have considered the cited portions of Dr. AlRegib’s testimony (*see* Ex. 2018 ¶¶ 123–130), but Patent Owner’s reliance on it is unavailing because it contains the same errors as Patent Owner’s arguments.

c. Conclusion

In sum, we are persuaded that a person of ordinary skill in the art would have been motivated to combine Lee and Smith, as proposed, and we are persuaded that the Lee-Smith combination teaches each limitation of claim 12. Accordingly, we conclude that Petitioner has shown, by a

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preponderance of the evidence, that the subject matter of claim 12 would have been obvious over Lee and Smith.

3. *Claim 16*

Claim 16 depends from claim 14 and recites similar limitations as claim 12, except that in lieu of basing the selection on “the information identifying content reproduction capabilities,” claim 16 requires the selection to be based on “the connectivity related information” recited in claim 14. Ex. 1001, 17:31–40.

Petitioner contends that the subject matter of this claim would have been obvious over the proposed combination of Lee and Smith. 1335-Pet. 78–80. Petitioner relies on its earlier analysis of claims 12 and 14 and its earlier explanation of the rationale to combine Lee and Smith. *Id.* at 78–79. Petitioner further argues that the Lee-Smith combination also teaches selecting a version of content based on “connectivity related information” because Smith selects a version of content based on sensed “network conditions” and Lee uses device character information to check compatibility before sending a content list and when resuming playback. *Id.* at 79–80 (quoting Ex. 1017 §§ 4.1; citing Ex. 1004 §§ 3.1–3.9, Fig. 5; Ex. 1017 §§ 4.1, 4.1.4).

Patent Owner disputes Petitioner’s showing for the reasons explained above with respect to claim 12. *See* PO Resp. 82–83.

Having considered the parties arguments, we are persuaded that a person of ordinary skill in the art would have been motivated to combine Lee and Smith as proposed, notwithstanding Patent Owner’s arguments to the contrary. *See supra* § II.G.2.b. Moreover, we are persuaded that the limitations of claim 16 would have been obvious over the Lee-Smith

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combination. *E.g.*, Ex. 1004 § 3.2; Ex. 1017 § 4.1.4. Accordingly, we conclude that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 16 would have been obvious over Lee and Smith.

4. Claims 26 and 29

Claims 26 and 29 depend from independent claims 23 and 27, respectively, and they recite limitations substantially similar to those in claim 12. Ex. 1001, 18:61–19:8. Petitioner contends that the subject matter of these claims would have been obvious over the proposed combination of Lee and Smith for the reasons explained in connection with claim 12 (1335–Pet. 80–82), and Patent Owner also relies on its earlier arguments regarding claim 12 (PO Resp. 82–83).

For the reasons explained above regarding claim 12, we are persuaded that a person of ordinary skill in the art would have been motivated to combine Lee and Smith as proposed, notwithstanding Patent Owner’s arguments to the contrary, and we are persuaded that the limitations of claims 26 and 29 would have been obvious over the Lee-Smith combination. *See supra* § II.G.2. Accordingly, we conclude that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claims 26 and 29 would have been obvious over Lee and Smith.

H. Anticipation Ground Based on Lee

Petitioner contends that the claims 1–4, 6–9, 17–25, 27, 28, and 30 are anticipated by Lee. Pet. 18–53; 1334–Pet. 58–76.

For the reasons previously explained in connection with Petitioner’s obviousness ground, we determine that Petitioner fails to show that claim 30 is unpatentable as anticipated. *See supra* § II.E.3. We have already found

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claims 1–4, 6–9, 17–25, 27, and 28 to be unpatentable (*see supra* §§ II.E.1–2, 4–7), so we need not (and do not) address whether Petitioner has shown these claims to be unpatentable as anticipated by Lee. *See SAS Inst.*, 138 S. Ct. at 1359; *Boston Sci. Scimed*, 809 F. App’x at 990.

III. OBJECTION TO DEMONSTRATIVES

Petitioner objects to slides 46–51 of Patent Owner’s oral hearing demonstratives, arguing that they include improper new argument raised for the first time in Patent Owner’s Sur-reply. Paper 42 (citing Papers 33, 38).

We dismiss this objection as moot. Demonstratives are neither evidence nor a mechanism for making new arguments. *See* Paper 37 (Order Setting Oral Argument), 3–4. In this Final Written Decision, we only rely on the arguments properly presented in the parties’ briefs and the evidence of record, not on the demonstratives. Moreover, even considering the allegedly new arguments in Patent Owner’s slides, the outcome here would not change, for the reasons explained above in connection with the discussion of the corresponding argument in Patent Owner’s Sur-reply. *See supra* § II.E.1.b.ii (addressing “usage history”).

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IV. CONCLUSION³⁰

On this record, Petitioner has shown by a preponderance of the evidence that claims 1–29 of the '938 patent are unpatentable, and Petitioner has not shown that claim 30 of the '938 patent is unpatentable.

In summary:

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–4, 6–9, 17–25, 27, 28, 30	102(a)	Lee ³¹		30
1–4, 6–11, 13–15, 17–25, 27, 28, 30	103(a)	Lee	1–4, 6–11, 13–15, 17–25, 27, 28	30
5	103(a)	Lee, Glance	5	
10–16, 26, 29	103(a)	Lee, Smith ³²	12, 16, 26, 29	
Overall Outcome			1–29	30

³⁰ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*, 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

³¹ We do not address the contention that claims 1–4, 6–9, 17–25, 27, and 28 are anticipated by Lee. *See supra* § II.H.

³² We do not address the contention that claims 10, 11, and 13–15 would have been obvious over Lee and Smith. *See supra* § II.G.1.

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V. ORDER

Accordingly, it is

ORDERED that claims 1–29 of U.S. Patent No. 10,911,938 B2 are determined to be unpatentable;

FURTHER ORDERED that claim 30 of the '938 patent is not determined to be unpatentable;

FURTHER ORDERED that Petitioner's Objections to Patent Owner's Demonstratives (Paper 42) are *dismissed* as moot; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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FOR PETITIONER:

Harper Batts
Jeffrey Liang
Chris Ponder
SHEPPARD, MULLIN, RICHTER & HAMPTON LLP
hbatts@sheppardmullin.com
jliang@sheppardmullin.com
cponder@sheppardmullin.com

FOR PATENT OWNER:

Daniel Young
ADSERO IP LLC
d/b/a SWANSON & BRATSCHUN LLC
dyoung@adseroip.com

Chad King
KING IAM LLC
chad@king-iam.com



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(12) **United States Patent**
Karaoguz et al.

(10) **Patent No.:** **US 10,911,938 B2**
(45) **Date of Patent:** **Feb. 2, 2021**

(54) **METHOD AND SYSTEM FOR A NETWORKED SELF-CONFIGURING COMMUNICATION DEVICE UTILIZING USER PREFERENCE INFORMATION**

(71) Applicant: **Avago Technologies International Sales Pte. Limited, Singapore (SG)**

(72) Inventors: **Jeyhan Karaoguz, Irvine, CA (US); Arya Behzad, Poway, CA (US); Mark Buer, Gilbert, AZ (US); Alexander G. Macinnis, Ann Arbor, MI (US); Thomas Quigley, Franklin, NC (US); John Walley, Ladera Ranch, CA (US)**

(73) Assignee: **AVAGO TECHNOLOGIES INTERNATIONAL SALES PTE. LIMITED, Singapore (SG)**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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CPC **H04W 8/18** (2013.01); **H04W 8/20** (2013.01); **H04W 8/205** (2013.01); **H04W 8/24** (2013.01); **H04W 8/245** (2013.01)

(58) **Field of Classification Search**
USPC 709/222, 201, 203
See application file for complete search history.

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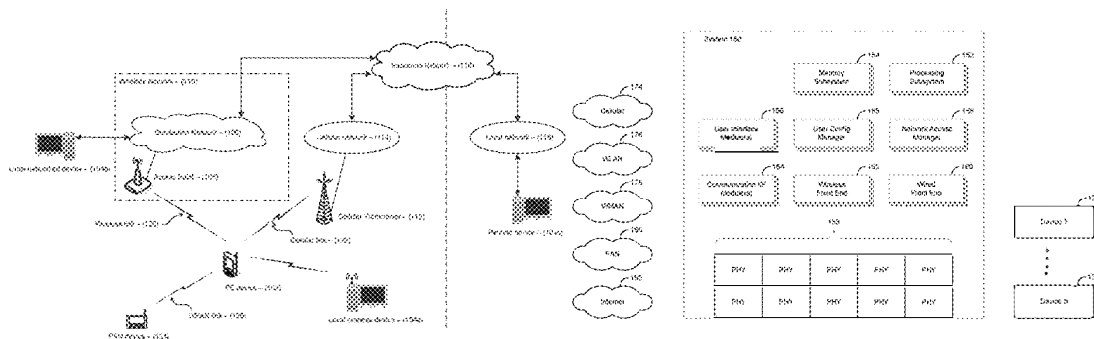
Primary Examiner — Jude Jean Gilles

(74) *Attorney, Agent, or Firm* — Morgan, Lewis & Bockius LLP

(57) **ABSTRACT**

A first electronic device may enable generation, updating, and/or storage of user configuration information. The user configuration information may comprise information pertaining to device configuration and/or operational preferences specific to the device user and/or various use settings, connectivity, and/or use of available resources. The generation, updating, and/or storage of the user configuration information may be performed manually and/or automatically, and may be performed directly within the first electronic device and/or via networked devices, which may communicatively coupled to the first electronic device. A second electronic device may be enabled to be communicatively coupled to the first electronic device and/or the networked devices. The second electronic device may then be enabled to download existing user configuration information from the first electronic device and/or the networked device, and the downloaded user configuration may be utilized to configure the second electronic device.

30 Claims, 4 Drawing Sheets



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Related U.S. Application Data

continuation of application No. 14/949,396, filed on Nov. 23, 2015, now Pat. No. 9,918,218, which is a continuation of application No. 12/138,249, filed on Jun. 12, 2008, now Pat. No. 9,198,030.

(60) Provisional application No. 60/943,484, filed on Jun. 12, 2007.

(51) **Int. Cl.**
H04W 8/20 (2009.01)
G06F 15/177 (2006.01)

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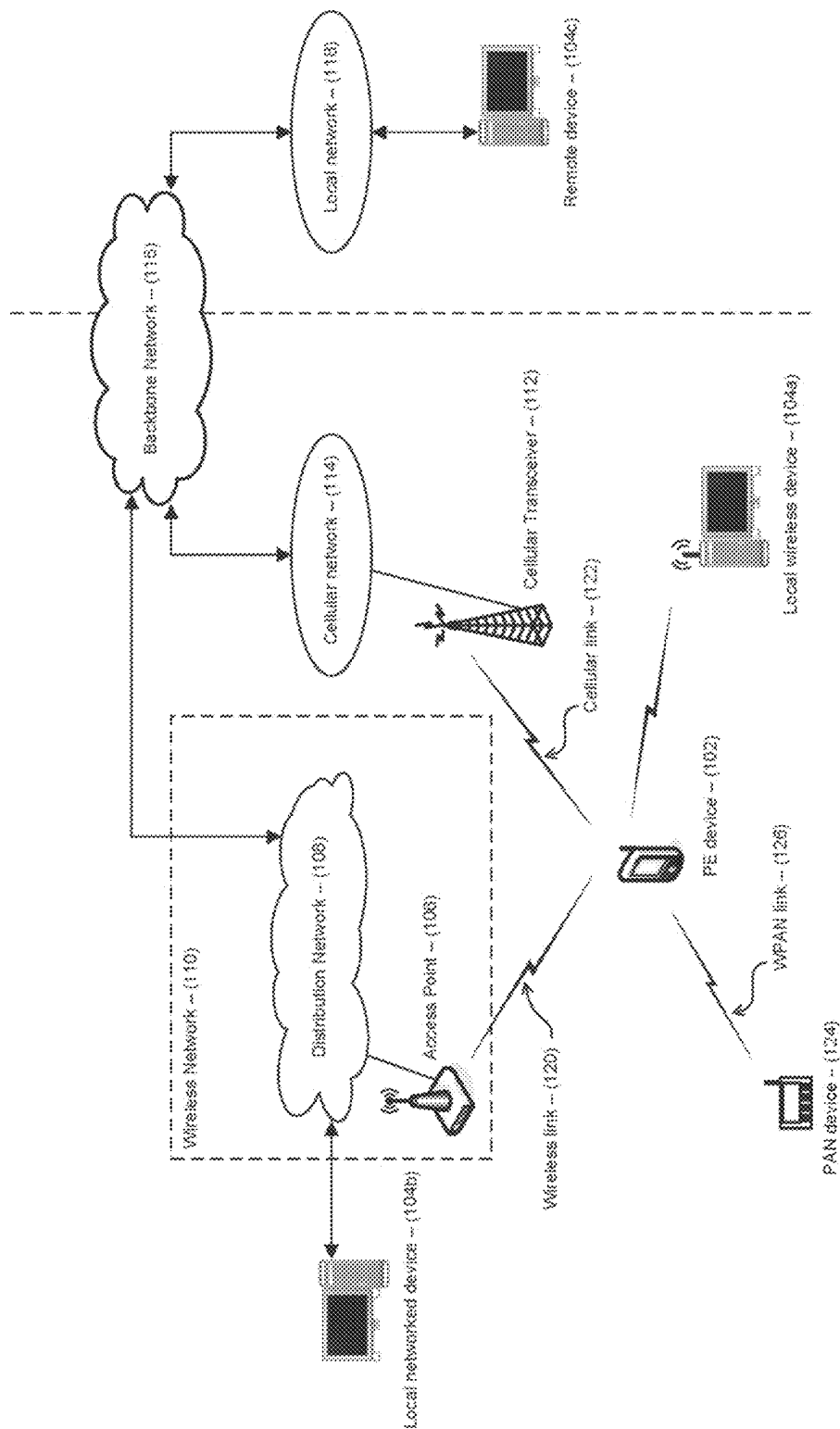


FIG. 1A

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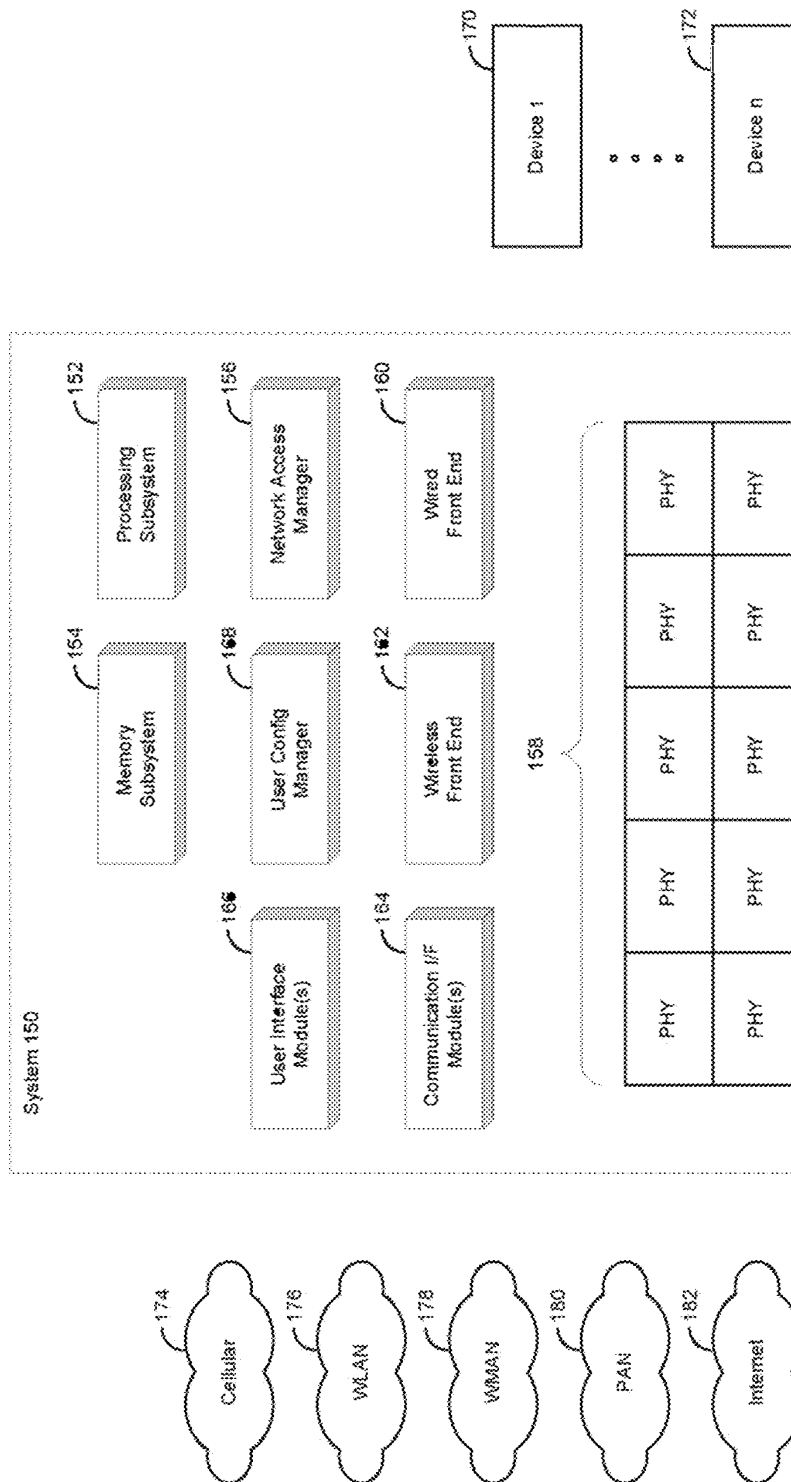


FIG. 1B

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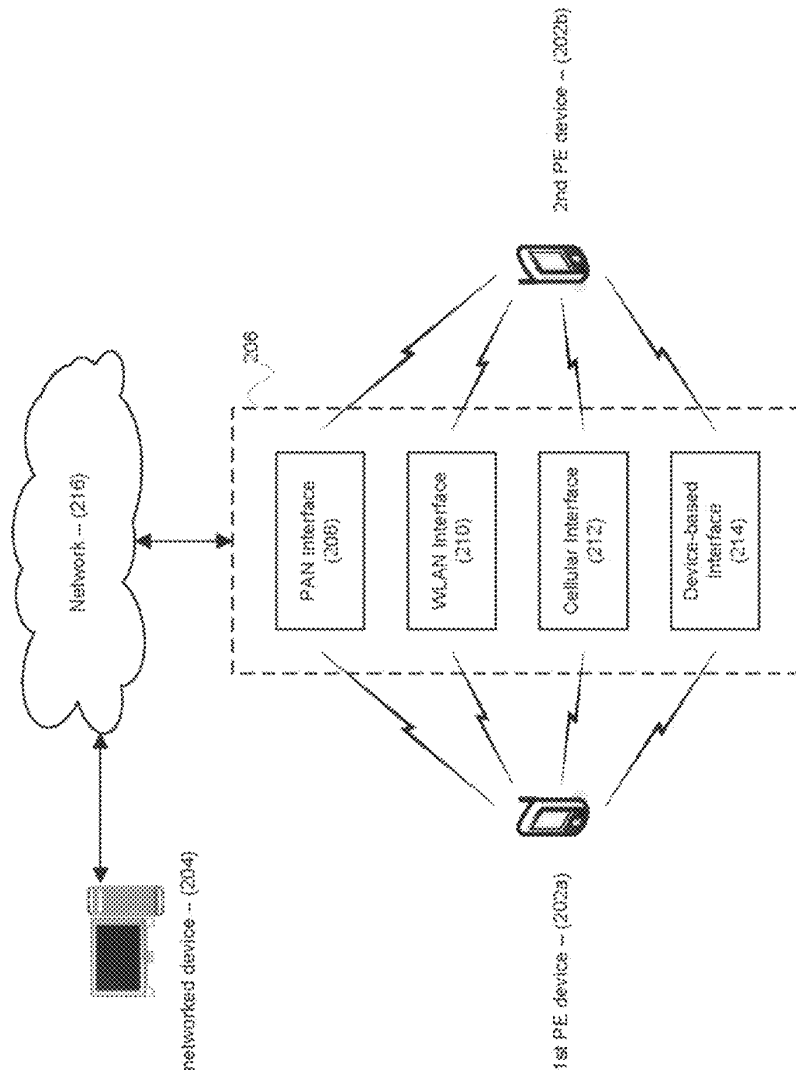


FIG. 2

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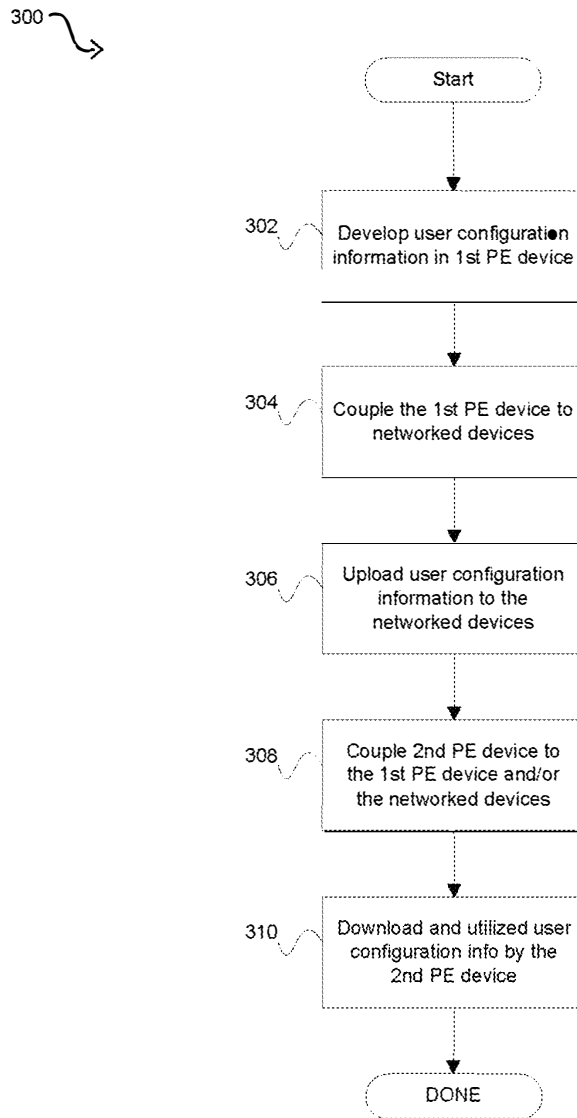


FIG. 3

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METHOD AND SYSTEM FOR A NETWORKED SELF-CONFIGURING COMMUNICATION DEVICE UTILIZING USER PREFERENCE INFORMATION

CROSS-REFERENCE TO RELATED APPLICATIONS/INCORPORATION BY REFERENCE

This patent application is a continuation of U.S. patent application Ser. No. 15/916,808, filed Mar. 9, 2018, which is a continuation of U.S. patent application Ser. No. 14/949,396, filed Nov. 23, 2015 (now U.S. Pat. No. 9,918,218), which is a continuation of U.S. patent application Ser. No. 12/138,249, filed Jun. 12, 2008 (now U.S. Pat. No. 9,198,030), which makes reference to, claims priority to and claims benefit from U.S. Provisional Application Ser. No. 60/943,484, filed on Jun. 12, 2007; the entire contents of each of which are incorporated herein by reference.

This application also makes reference to:
 U.S. patent application Ser. No. 11/864,184—U.S. Pat. No. 8,331,294, issued Dec. 11, 2012 filed on Sep. 28, 2007;
 U.S. patent application Ser. No. 11/861,224—U.S. Pat. No. 8,027,668 issued Sep. 27, 2011 filed on Sep. 25, 2007;
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 U.S. patent application Ser. No. 11/864,202—U.S. Pat. No. 9,509,795, issued Nov. 29, 2016 filed on Sep. 28, 2007;
 U.S. patent application Ser. No. 11/864,562—U.S. Pat. No. 8,442,015, issued May 14, 2013 filed on Sep. 28, 2007;
 U.S. patent application Ser. No. 11/864,407—U.S. Pat. No. 8,331,334, issued Dec. 11, 2012 filed on Sep. 28, 2007;
 U.S. patent application Ser. No. 11/864,255—U.S. Pat. No. 9,232,042, issued Jan. 5, 2016 filed on Sep. 28, 2007;
 U.S. patent application Ser. No. 11/865,799—U.S. Pat. No. 7,953,038, issued May 31, 2011 filed on Oct. 2, 2007;
 U.S. patent application Ser. No. 11/864,095—U.S. Pat. No. 8,553,623, issued Oct. 8, 2013 filed on Sep. 28, 2007; and
 U.S. patent application Ser. No. 11/864,383 filed on Sep. 28, 2007.

Each of the above stated applications is hereby incorporated herein by reference in its entirety.

FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[Not Applicable].

MICROFICHE/COPYRIGHT REFERENCE

[Not Applicable].

FIELD OF THE INVENTION

Certain embodiments of the invention relate to communication devices. More specifically, certain embodiments of the invention relate to a method and system for a networked self-configuring communication device utilizing user preference information.

BACKGROUND OF THE INVENTION

The field of mobile and/or wireless communication has seen dramatic growth the last few years. In today's world, most people use wireless devices for various purposes,

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including business and personal, on a constant and daily basis. Society is truly becoming a mobile and wireless one. Numerous wireless solutions have been introduced, and have made a tremendous impact on everyday life.

For example, the use of Wireless Personal Area Networks (WPAN) has been gaining popularity in a great number of applications because of the flexibility and convenience in connectivity they provide. WPAN systems generally replace cumbersome cabling and/or wiring used to connect peripheral devices and/or mobile terminals by providing short distance wireless links that allow connectivity within very narrow spatial limits (typically, a 10-meter range). WPAN may be based on standardized technologies, for example Bluetooth (BT) technology. While WPAN may be very beneficial for certain applications, other applications may require larger service areas and/or capabilities.

To satisfy such needs, other technologies have been developed to provide greater wireless service. Wireless Local Area Networks (WLAN) systems may operate within a 100-meter range, for example. In contrast to the WPAN systems, WLAN provide connectivity to devices that are located within a slightly larger geographical area, such as the area covered by a building or a campus, for example. WLAN systems are generally based on specific standards, for example IEEE 802.11 standard specifications, and typically operate within a 100-meter range, and are generally utilized to supplement the communication capacity provided by traditional wired Local Area Networks (LANs) installed in the same geographic area as the WLAN system.

Other forms of wireless solutions have evolved from traditional land-based communication technologies. For instance, cellular phones have become just about an absolute necessity in today's world. While cellular technology was merely intended to add an element of mobility to the traditional telephony service, this technology has grown beyond that initial purpose. Many modern cellular technologies, including such technologies as GSM/GPRS/EDGE, UMTS, and CDMA2000, incorporate substantial data capabilities. Most of today's cellular services include such features as text messaging, video streaming, and web browsing, for example.

Placing various wireless technologies in a single communication device is another trend in the wireless world. For instance, some wireless devices such as cell phones may include WLAN and WPAN functionalities. For example, Bluetooth technology may be utilized to connect a laptop computer or a handheld wireless terminal to a peripheral device, such as a keyboard, mouse, headphone, and/or printer, while the laptop computer or the handheld wireless terminal is also connected to a campus-wide WLAN network through an access point (AP) located within the building.

Further limitations and disadvantages of conventional and traditional approaches will become apparent to one of skill in the art, through comparison of such systems with some aspects of the present invention as set forth in the remainder of the present application with reference to the drawings.

BRIEF SUMMARY OF THE INVENTION

A system and/or method is provided for a networked self-configuring communication device utilizing user preference information, substantially as shown in and/or described in connection with at least one of the figures, as set forth more completely in the claims.

These and other advantages, aspects and novel features of the present invention, as well as details of an illustrated

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embodiment thereof, will be more fully understood from the following description and drawings.

BRIEF DESCRIPTION OF SEVERAL VIEWS OF THE DRAWINGS

FIG. 1A is a block diagram that illustrates exemplary setup comprising a personal electronic (PE) device, which may be utilized in accordance with an embodiment of the invention.

FIG. 1B is a block diagram that illustrates an exemplary system that may be integrated within a personal electronic (PE) device to enable management of user configuration, and utilization of plurality of communication interfaces and/or devices, in accordance with an embodiment of the invention.

FIG. 2 is a block diagram that illustrates use of stored user preference information to configure a secondary personal electronic (PE) device, in accordance with an embodiment of the invention.

FIG. 3 is a flow chart that illustrates use of stored user preference information to configure a secondary personal electronic (PE) device, in accordance with an embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

Certain embodiments of the invention may be found in a method and system for a networked self-configuring communication device utilizing user preference information. A first personal electronic (PE) device may enable generation, updating, and/or storage of user configuration information. The user configuration information may comprise information pertaining to device configuration and/or operational preferences specific to the device user and/or various use settings, connectivity, and/or use of available resources. The generation, updating, and/or storage of the user configuration information may be performed manually and/or automatically, and may be performed directly within the first PE device and/or via networked devices, which may be communicatively coupled to the first PE device. A second PE device may be enabled to be communicatively coupled to the first PE device and/or the networked devices. The second PE device may then be enabled to download existing user configuration information from the first PE device and/or the networked device, and the downloaded user configuration may be utilized to configure the second PE device.

FIG. 1 is a block diagram that illustrates exemplary setup for a personal electronic (PE) device, which may be utilized in accordance with an embodiment of the invention. Referring to FIG. 1, there is shown a personal electronic (PE) device 102, a local wireless device 104a, a local networked device 104b, a remote device 104c, and an access point 106. FIG. 1 also shows a distribution network 108, a wireless network 110, a cellular transceiver 112, a cellular network 114, a backbone network 116, a local network 118, a wireless link 120, a cellular link 122, a Personal Area Networks (PAN) device 124, and a Wireless Personal Area Networks (WPAN) link 126.

The personal electronic (PE) device 102 may comprise suitable logic, circuitry and/or code that enables performing one or more tasks requested via users of the PE device 102. For example, the PE device 102 may enable personal communication, audio/video recording and/or playing, gaming operations, and/or various other tasks, which may be requested via the PE device 102 by a user. The PE device

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102 may be enabled to communicate with one or more of supported wireless and/or wired networks, and may also enable use of local and/or remote resources, to perform tasks requested via the PE device 102 for example. A user of the PE device 102 may utilize the PE device 102 directly, via supported user interfaces within the PE device 102, and/or indirectly via available networks and/or via other devices, such as the PAN device 124, which may interact with the PE device 102 via a communication interface. For example, the PE device 102 may comprise a portable handheld communication device, such as a Smartphone, a cellphone, a PDA, a multimedia device, which may be communicatively coupled to plurality of available networks, resources, and/or other communication devices which may exist locally and/or remotely.

The PE device 102 may comprise functionality that may enable utilizing one or more of available networks, to connect to available devices and/or resources for example. The network connectivity may be achieved directly, wherein the PE device 102 may be connected via wired connections, including, for example, use of a cable and/or optical interface, to LAN and/or WAN networks. The PE device 102 may also comprise one or more wireless communication interfaces, including, for example, WPAN, WLAN, and/or cellular interfaces, which may be operable to provide connectivity to corresponding networks and/or devices. The PE device 102 may comprise a user interface functionality that may enable one or more users to utilize the PE device 102 as an end user device and/or as an end user terminal device.

The PE device 102 may comprise functionality that enables generation, storage, modification, and/or utilization of user configuration information during use of the PE device 102 by a user. The user configuration information may comprise information pertaining to device configuration and/or operational preferences specific to the device user(s) and/or various use settings, connectivity, and/or use of available resources. Additionally, the PE device 102 may also comprise functionality that may enable performing user identification, for authentication and/or security purposes for example. The identification may be performed, for example, based on login information, based on compiled association information, between particular user and particular tasks and/or resource, and/or based on determined physical attributes of the user. The physical attributes of the user may be determined utilizing, for example, biometric based mechanisms within or coupled to the PE device 102. For example, the PE device 102 may comprise a biometric data acquisition subsystem which may enable performing acquisition, validation, and modification of physiological and/or behavioral biometric data. Biometric data, which may comprise finger prints, retina data, or behavioral patterns, may be unique to a person; and thus it may be utilized to identify a particular user. The PE device 102 may be utilized to enable use of plurality of the local and/or remote devices, for example, the local wireless device 104a, the local networked device 104b, and/or the remote device 104c to perform tasks requested by a user via the PE device 102.

The local wireless device 104a may comprise suitable logic, circuitry and/or code that is enabled to communicate with the PE device 102 to perform a function that may be pertinent to a task requested via the PE device 102, and for which the local wireless device 104a may be better suited to perform. The invention may not be limited to a specific device, and may comprise, for example, a general purpose processing device, a specialized processing device, a specialized peripheral device, or any combination of suitable hardware, and/or code, which may be enabled to perform a

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task requested via the PE device 102. For example, the local wireless device 104a may comprise a high-definition television (HDTV) set, a dedicated audio system, and/or a digital video player device, which may be optimized to provide improved audio and/or video output quality.

The local wireless device 104a may be enabled to communicate with the PE device 102 directly via wireless connections. The local wireless device 104a may be enabled to communicate with the PE device 102 via one or more the wireless protocols supported via the PE device 102, including, for example, WLAN, WiMAX, and/or WPAN such as ZigBee, Ultra-wideband (UWB), and/or Bluetooth. Alternatively, the communication between the local wireless device 104a and the PE device 102 may be performed directly based on device-specific interface, which may comprise suitable functionality that enables forming connections between specific devices. For example, the local wireless device 104a and the PE device 102 may be enabled to utilize a proprietary standard of wireless communication between these devices.

The local networked device 104b may be substantially similar to the local wireless device 104a. However, the local networked device 104b may be enabled to communicate with the PE device 102 indirectly via one or more of available local networks that the PE device 102 may be coupled with, including, for example, wireless network 110, to provide a service that may be pertinent to a task requested via the PE device 102. For example, the local networked device 104b may comprise a personal computer (PC), a printer, scanner, and/or fax device, a dedicated memory storage device, and/or a digital video recorder device. Consequently, the local service resource 104a may be utilized, for example, as a media service device which may provide multimedia streaming that may be read via the PE device 102.

The remote device 104c may be comprised substantially similar to the local networked device 104b and/or the local wireless device. However, the remote device 104c may also comprise functionality to enable remote communication with the PE device 102, via, for example, the cellular network 110, the backbone network 116, and the local network 118. For example, the remote device 104c may comprise a home PC, which may comprise improved processing subsystems and/or increased memory space. Such home PC may be better suited to perform processing and/or storage intensive tasks. The PE device 102 may utilize the remote device 104c, for example, for secure storage of data that may be created and/or maintained in the PE device 102, and/or as a backup depository for media files.

The wireless network 110 may comprise a plurality of the access point 106, the distribution network 108, and suitable logic, circuitry and/or code that may enable implementing a functional block corresponding to a wireless technology. Exemplary wireless technology may comprise for example the WLAN (IEEE 802.11) or the WiMAX (IEEE 802.16) architecture. The access point 106 may comprise suitable hardware, logic, circuitry, and/or code that may provide access network to the wireless network 110 for wireless capable devices, for example the PE device 102. The distribution network 108 may comprise suitable hardware, logic, circuitry, and/or code that may be enabled to operate as a backbone network that may be responsible for transport and link functionality for a plurality of access points in the wireless network 110.

The cellular network 114 may comprise plurality of the cellular transceiver 112, and suitable logic, circuitry and/or code that may enable communication via one or more

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cellular technologies. Exemplary cellular technologies may comprise CDMA, WCDMA, CDMA1000, HSDPA, GSM, GPRS, EDGE, and UMTS. The cellular transceiver 112 may comprise suitable hardware, logic, circuitry, and/or code that may be utilized to enable transmission and/or reception of cellular based communications between the cellular network 114 and cellular capable devices, for example the PE device 102. For example, the cellular transceiver 112 may correspond to cellular towers and/or base stations within a cellular communication system.

The PAN device 124 may comprise suitable logic, circuitry and/or code that may enable performing some accessory functionality in conjunction with the use of the PE device 102 based on a PAN protocol. For example, the PAN device 124 may comprise a hands-free headset that may be utilized, in conjunction with the PE device 102 to facilitated conducting cellular based calls. The PE device 102 may interact with the PAN device 124 via one or more PAN interfaces, which may be based on wired and/or wireless PAN protocols. For example, the PE device 102 may communicate with the PAN device 124 via the WPAN link 126. The WPAN link 126 may be based on a standardized technology for inter-device short range communication. For example, the WPAN link 126 may correspond to Bluetooth, ZigBee, and/or Ultra-Wideband (UWB) connections between the PAN device 124 and the PE device 102.

The backbone network 116 may comprise suitable hardware, logic, circuitry, and/or code that may be operable to provide overall system connectivity among local and/or remote sub-networks. The backbone network 116 may be enabled to interact with, and connect different wired and/or wireless technologies. For example, the backbone network may comprise a standard telephony network (POTS) that may enable data connectivity between different interface nodes linking wired and/or wireless networks comprising WLAN networks, WiMAX networks, cellular networks, and/or LAN networks.

The local network 118 may comprise suitable logic, circuitry and/or code that may enable local connectivity. This local connectivity may comprise use of Local Area Network (LAN) technologies that enable data services, including but not limited to, IEEE 802.3 Ethernet. Other technologies may comprise WiMAX. The local network 118 may be accessed, for example, by the PE device 102, via wireless network 110 and/or the cellular network 114, and the backbone network 116.

In operation, the PE device 102 may be utilized to perform one or more tasks requested via users of the PE device 102. For example, the PE device 102 may enable personal communication, playing and/or recording audio/video streams, and/or may be utilized as a gaming counsel. The PE device 102 may also enable connectivity via a plurality of available networks and/or communication interfaces, which may be necessary to perform requested tasks. For example, the PE device 102 may utilize the wireless link 120 to access the wireless network 110 via the access point 106. The PE device 102 may also utilize the cellular link 122 to access the cellular network 114 via the cellular transceiver 112. The PE device 102 may communicate with the local networked device 104b via the wireless network 110 through the access point 106 and the distribution network 108. The distribution network 108 and/or the cellular network 114 may also enable forwarding messages and/or data sent from, and to the PE device 102.

The backbone network 116 may enable connectivity between local networks, for example wireless network 110 and/or the cellular network 114, and remote networks,

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comprising, for example, the local network 118. Protocol-based operations may be performed to facilitate the transmission of information through all the different components. This may comprise use of exemplary protocols such as TCP, IP, UDP, and/or SS7. Network connectivity and/or communication interfaces supported via the PE device 102 may enable communicating with other devices. For example, the PE device 102 may communicate with the local networked device 104b via the wireless network 110. The remote device 104c may be enabled to communicate with the PE device 102 through the backbone network 116, via the local network 118. The PE device 102 may also be enabled to communicate directly with other devices and/or resources. For example, the PE device 102 may communicate directly with the PAN device 124 via the WP AN link 126. The PE device 102 may also communicate directly with the local wireless device 104a, and such communication may be based on existing wireless and/or wired interfaces, and/or the communication may be based on device-specific interfaces that may be limited to class of devices comprising the PE device 102 and the local wireless device 104a.

A user of the PE device 102 may request tasks that may be performed directly via the PE device 102, and/or via the connectivity of PE device 102 to available networks, devices, and/or resources. For example, the PE device 102 may be enabled to communicate with the local networked device 104b and/or the remote device 104c to facilitate accessing services provided by the local networked device 104b and/or the remote device 104c. The PE device 102 may be enabled, for example, to access media, storage, processing, and/or gaming services based on one or more tasks requested by a user of the PE device 102. The PE device 102 may also be enabled to utilize devices available directly via communication interfaces within the PE device 102. In an exemplary embodiment of the invention, when requested by a user, the PE device 102 may communicate multimedia files received from the local networked device 104b and/or the remote device 104c to the local wireless device 104c, which may enable, improved output quality of audio and/or video contents of the multimedia files.

The PE device 102 may be enabled to generate, store, and/or update user configuration information that may be utilized in facilitating use of the PE device 102 by a particular user to perform requested tasks, and/or in identifying and/or authenticating the user. The user configuration information may also be generated, stored, and/or updated remotely, in the remote device 104c for example, based on communications via the PE device 102, to ensure security and/or efficiency. The user configuration information may comprise, for example, information pertaining to device configuration and/or operational preferences specific to the device user and/or various use settings, network connectivity, service access, secure access information, network and service access information and/or preferences that are unique to particular users, and/or manner of use of available resources. For example, the user configuration information may specify various user specific device operational preferences, comprising favorite broadcast channels and/or website, favorite games, game status information, and media consumption settings. Exemplary media consumption settings may comprise file types and/or video or audio presentation preferences, website access information, user interface configuration preferences, and/or directory information. The user configuration information may also specify particular devices, for example, the remote device 104c, which may be accessed to perform certain type of operations and/or to store and retrieve specific category of data. The user

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configuration information may also specify connectivity related information comprising, for example, types of networks to be connectively coupled to, the wireless network 110 for example, and/or other performance related criteria such as cost, availability, bandwidth level, QoS capabilities, security, and reliability. The PE device 102 may also enable a set of the plurality of supported users to share user configuration information, wherein such set of users may be treated as a specific group.

The PE device 102 may also be enabled to identify a particular user in a variety of manners. For example, the PE device 102 may identify a particular user by login information, which may be determined based on user configuration information; physical attributes of the person, which may be derived from biometric functionality that may integrated within the PE device 102 or utilized externally to it; and/or based on predetermined associations between particular user and peripheral devices, resources, and/or communication interfaces.

FIG. 1B is a block diagram that illustrates an exemplary system that may be integrated within a personal electronic (PE) device to enable management of user configuration, and utilization of plurality of communication interfaces and/or devices, in accordance with an embodiment of the invention. Referring to FIG. 1B, there is shown a system 150, a processing subsystem 152, a memory subsystem 154, a network access manager 156, a plurality of PHY layers 158, a wired front-end 160, a wireless front-end 162, a communication interface module 164, a user interface modules 166, a user configuration manager 168, a plurality of devices 170, . . . , 172, a cellular network 174, a wireless local area network (WLAN) 176, a Wireless Metropolitan Area Networks (WMAN) 178, a Personal area network (PAN) 180, and an internet network 182.

The system 150 may comprise the processing subsystem 152, the memory subsystem 154, the network access manager 156, the plurality of PHY layers 158, the wired front-end 160, the wireless front-end 162, the communication interface modules 164, the user interface modules 166, the user configuration manager 168. The system 150 may also comprise additional suitable logic, circuitry, and/or code that may enable management of user configuration, and utilization of plurality of communication interfaces and/or devices.

The processing subsystem 152 may comprise suitable logic, circuitry and/or code that enables performing processing operations. The invention may not be limited to a specific processor, but may comprise for example, a general purpose processor, a specialized processor or any combination of suitable hardware, firmware, software and/or code, which may be enabled to provide particular processing operations. For example, the processing subsystem 152 may comprise a plurality of processors that may enable performing various processing operations, comprising general control and/or processing functionality, and/or processing pertinent to particular tasks and/or operations. The memory subsystem 154 may comprise suitable logic, circuitry and/or code that may enable storage and/or retrieval of data and/or code in the system 150. For example, the memory subsystem 154 may comprise a plurality of memory components which may be utilized by the processing subsystem 152 and/or the remaining subsystems and/or components in system 150 during various operations in the system.

The network access manager 156 may comprise suitable logic, circuitry, and/or code that may enable performing management and/or control operations that may facilitate access to available networks. For example, the network access manager 156 may be utilized within the system 200

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to enable access to one or more of the cellular network 174, the WLAN network 176, the WMAN network 178, the PAN network 180, and/or the internet network 182. Each of the plurality of PHY layers 158 may correspond to the physical layer within the Open System Interface (OSI) model, which may enable transmitting raw bits via communication links based on a wired or wireless interface. For example, one of the plurality of PHY layers 158 may correspond to the physical layer within the Bluetooth stack, which may comprise functionality that enable transmission and/or reception of raw bits via Bluetooth based communication links.

The wired front-end 160 may comprise suitable logic, circuitry and/or code that may enable transmission and/or reception of communication via one or more wired interfaces, based on, for example, one or more of the plurality of PHY layers 158. For example, the wired front-end 160 may enable communications via USB terminals, modem connectivity, external memory devices interfaces, and/or FireWire interface. The wireless front-end 162 may comprise suitable logic, circuitry and/or code that may enable transmission and/or reception of communication via one or more wireless based interface, based on, for example, one or more of the plurality of PHY layers 158. For example, the wireless front-end 162 may comprise antenna systems that may enable transmission and/or reception of communication via WLAN, Bluetooth, WiMAX, and/or cellular based interfaces.

The communication interface modules 164 may comprise suitable logic, circuitry and/or code that enables, via the system 150, utilization, control, and/or management of communication via plurality of communication interfaces, for example via the wired front-end 160 and/or the wireless front-end 162, based on one or more corresponding layers in the plurality of the PHY layer 158. For example, the communication interface modules 164 may comprise modules to enable communication via various wireless and/or wired communication interface, comprising, Bluetooth interface, other WPAN (IEEE 802.15) interface, WLAN (IEEE 802.11) interface, WiMAX (IEEE 802.16) interface, Mobile Broadband Wireless Access (MBWA, IEEE 802.20) interface, Time Division Multiple Access (TDMA) interfaces, GSM/GPRS/EDGE interfaces, CDMA/CDMA200/WCDMA interfaces, H.323 interface, USB interface, and/or Modem interface.

The user interface modules 166 may comprise suitable logic, circuitry and/or code that enables utilization of various user interfaces that may be available via the system 150. For example, the system 150 may be integrated within a device, for example the PE device 102, to enable supporting user interfaces in the device to enable direct interactions with the device by users of the device. The user interface modules 166 may enable utilization of video based input/output (I/O) interfaces, via display and/or digital camera components in the system 150 for example; the user interface modules 166 may also enable of audio based I/O interfaces, via speaker and/or microphone components in the system 150 for example. The user interfaces modules 166 may also enable utilization of physical based input/output (I/O) interfaces, via touch screen, vibration, gyroscopic and/or keypad components in the system 150 for example.

The user configuration manager 168 may comprise suitable logic, circuitry and/or code that enables performing of management and/or control operations pertaining to the user configuration information corresponding to a supported user, or a group of users, of a device that may comprise the system 150. For example, where the system 150 may be integrated within the PE device 102, the user configuration

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manager 168 may enable generation, storage, updating, and/or use of user configuration information, substantially as described with respect to FIG. 1.

Each of the plurality of devices 170, . . . , 172, may comprise suitable logic, circuitry and/or code that is enabled to provide, external to device comprising the system 150, various services and/or functionality that may be necessary to perform a requested task via the system 150. For example, the plurality of devices 170, . . . , 172, may comprise the local wireless device 104a, the local networked device 104b, and/or the remote device 104c, substantially as described with respect to FIG. 1.

The cellular network 174 may comprise suitable logic, circuitry and/or code that may enable implementing a functional block corresponding to a cellular technology, comprising, for example, but not limited to, CDMA, WCDMA, CDMA1000, HSDPA, GSM, GPRS, EDGE, and/or UMTS. The WLAN network 176 may comprise suitable logic, circuitry and/or code that may enable implementing a functional block corresponding to a WLAN protocol, including, for example, IEEE 802.11. The WMAN network 178 may comprise suitable logic, circuitry and/or code that may enable implementing a functional block corresponding to a WMAN protocol, comprising, for example, IEEE 802.16. The PAN network 180 may comprise suitable logic, circuitry and/or code that may enable implementing a functional block corresponding to a PAN interface. The PAN network 180 may comprise wired based connectivity, via buses such as Universal Serial Bus (USB), for example. Additionally, wireless personal area network (WPAN) may be utilized, comprising, for example, WPAN protocols such as Bluetooth (IEEE 802.15), UWB, and/or ZigBee. The Internet network 182 may comprise suitable logic, circuitry and/or code that may enable implementing a functional block corresponding to an internet protocol, including Internet Protocol (IP) for example.

In operation, the system 150 may be integrated within a device, for example the PE device 102, to enable management of user configuration, and utilization of plurality of communication interfaces and/or devices. The processing subsystem 152 and/or the memory subsystem 152 may be utilized to enable overall control and management, and/or to enable management and/or control during particular operations within the system 150, for example, during DSP, audio, and/or video processing.

The system 150 may enable connectivity related operations to facilitate performing tasks requested via the PE device 102. For example, network connectivity may be performed via the network access manager 156, which may enable managing access to one or more of the cellular network 174, the WLAN network 176, the WMAN network 178, the PAN network 180, and/or the internet network 182. During network accessibility operations, the system 150 may utilize appropriate PHY functionality, within the plurality of PHY layers 158, to enable transmission and/or reception of communication between the system 150 and the corresponding network. For example, to facilitate connectivity with the WLAN network 176, the network access manager 156 may be enabled to utilize a WLAN PHY within the plurality of PHY layers 158 to enable the system 150 to perform WLAN based communications. The system 150 may also enable the PE device 102 to utilize one or more of the plurality of devices 170, . . . , 172, which may be utilized to perform specific operations that may not be available, or optimal, directly via the PE device 102. Network connectivity, via the network access manager 156, may be utilized to enable access to the desired devices. Additionally, the

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system 150 may be enabled to utilize appropriate PHY functionality within the plurality of PHY layers 158, to enable direct transmission and/or reception of messaging between the system 150 and the corresponding device(s).

The system 150 may enable a user of the PE device 102 to interact indirectly via the user interface modules 166. For example, the user interface modules 166 may enable users of the PE device 102 via video based I/O interfaces, audio based I/O interfaces, and/or physical based I/O interfaces. The system 150 may also enable the user to communicate indirectly, via network connectivity. For example, communications between users and the system 150 may be transmitted and/or received via the wireless front-end 256 and/or the wired front-end 258, based on one or more of the various interfaces supported via the communication modules 164.

The user configuration manager 168 may enable performing user configuration operation via the system 150, including, for example, generation, storage, and/or update of user configuration information. The user configuration operations may be performed directly via system 150. For example, the user configuration manager 168 may enable performing generation, storage, and/or updating of user configuration information within the system 150, via the processing subsystem 152 and/or the memory subsystem 154. In some instances, at least a portion of the user configuration operations may be performed external to the system 150, utilizing, for example, network connectivity and/or accessibility to available devices and/or resources via various communication interfaces. For example, the user configuration manager 168 may be enabled to communicate with one or more of the plurality of devices 170, . . . , 172, via the network access manager 156 and/or the communication interface modules 166, to enable performing at least a portion of the generation, storage, and/or updating of user configuration information via such devices.

The generation of the user configuration information, via the user configuration manager 168, may be performed automatically, during initial setup on a device comprising the system 150 for example. The generation of the user configuration information may also be performed manually, based on user commands, for example, which may communicated directly into the system 150 via the user interface 166, and/or indirectly via the communication interface modules 164 for example. The generated user configuration information may be updated. The updating of the user configuration information may be performed manually, based on user commands for example, which may communicated directly into the system 150 via the user interface 166, and/or indirectly via the communication interface modules 164. In some instances, the updating of the user configuration information may be performed automatically, based on pre-determined conditions. For example, the user configuration information may be updated and/or modified at pre-determined periodic intervals, when a device comprising the system 150 is used in manner different than existing operational preferences, and/or when an update is triggered by specified use and/or operating conditions.

Generated and/or updated user configuration information may be stored within the system 150, for example via the memory subsystem 154. Alternatively, the generated and/or updated user configuration information may be uploaded into a remote storage entity, within one or more of the plurality of devices 170, . . . , 172 for example.

FIG. 2 is a block diagram that illustrates use of stored user preference information to configure a secondary personal electronic (PE) device, in accordance with an embodiment of the invention. Referring to FIG. 2, there is shown a first

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PE device 202a, a second PE device 202b, a networked device 204, a plurality of communication interfaces 206, a personal area network (PAN) interface 208, a Wireless Local Area Network (WLAN) interface 210, a cellular interface 212, and a device-based interface 214, and a network 216.

Each of the PE devices 202a and 202b may be substantially similar to the PE device 102. For example, each of the PE devices 202a and 202b may comprise an instance of the system 150 to enable management of user configuration, and utilization of plurality of communication interfaces and/or devices. The networked device 204 may comprise a device that may be enabled to communicate with the PE devices 202a and/or 202b, via the plurality of communication interfaces 206 and/or the network 216 for example, to enable performing tasks requested via the PE devices 202a and/or 202b. For example, the networked device 204 may be substantially similar to the local wireless device 104a, the local networked device 104b, and/or the remote device 104c.

The plurality of communication interfaces 206 may comprise one or more interfaces that may enable direct communications between PE devices 202a and 202b, and/or may enable connectivity to the networked device 204, via the network 216 for example. The plurality of communication interfaces 206 may comprise one or more wireless interfaces. The invention may not be limited to a specific type of wireless interface, but may comprise for example, the PAN interface 208, the WLAN interface 210, and/or the cellular interface 212. The plurality of communication interfaces 206 may also comprise the device-based interface 214, which may enable communication between specific types of devices. The PAN interface 208 may comprise suitable functionality that enables forming connections based on the PAN protocol, including, for example, Bluetooth (IEEE 802.15), ZigBee, and/or UWB. The WLAN interface 210 may comprise suitable functionality that enables forming connections based on the WLAN standard (IEEE 802.11). The cellular interface 212 may comprise suitable functionality that enables forming connections based on one or more cellular standards comprising GSM/GPRS/EDGE, CDMA, HSDPA, UMTS, LTE and CDMA2000. The device-based interface 214 may comprise suitable functionality that enables forming connections between specific devices. For example, the PE device 202a, the PE device 202b, and/or the networked device 204 may be enabled to utilize a proprietary standard of wireless protocol to facilitate communication between these devices.

The network 216 may comprise suitable hardware, logic, circuitry, and/or code that is operable to provide connectivity among local and/or remote sub-networks. The network 216 may be enabled to interact with, and connect to different wired and/or wireless interfaces. For example, the network 216 may comprise a telephony network such as a plain old telephone system (POTS) and/or an a packet based network that may enable data connectivity between different interface nodes linking wired and/or wireless networks comprising WLAN networks, WiMAX networks, PAN networks, cellular networks, and/or LAN networks. The network 216 may enable use of the networked device 204, via the plurality of communication interfaces 206, by the PE devices 202a and/or 202b, to perform various requested tasks, including, for example, storage and/or retrieval of user configuration information.

In operation, the PE device 202a may be enabled to develop user configuration information. For example, the PE device 202a may comprise the system 150, and may be able to generate, store, and/or update the user configuration information, substantially as described with respect to FIG. 1A.

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The user configuration information may be developed directly within the PE device 202a, utilizing, for example, the system 150, substantially as described with respect to FIG. 1B.

The user configuration information development, maintenance and/or administration may also be performed remotely, in the networked device 204, based on communication transmitted and/or received by the PE device 202a, via the plurality of communication interfaces 206 and/or the network 216 for example. The user configuration information may be stored directly within the PE device 202a, via the memory subsystem 154 in the system 150 for example. The user configuration information may also be uploaded, downloaded and/or otherwise communicated to the networked device 204 device, via network connectivity between the PE device 202a and networked device 204, to enable remote and/or secure storage, utilizing, for example, the system 150, substantially as described in FIG. 1B. The uploading of user configuration information may be performed manually, based on user commands, which may be communicated into the PE device 202a via the user interface modules 166 in the system 150, substantially as described in FIG. 1B. The uploading of the user configuration information may also be performed automatically, based on specified intervals and/or conditions for example. The user configuration information may be updated, via the PE device 202a for example, and the updated user configuration information may be uploaded into the networked device 204. The updating of the user configuration information may be performed manually, based on user commands, and/or it may be performed automatically, during use of the PE device 202a, based on, for example, specific use conditions.

Where a user of the PE device 202a may initiate use of a secondary PE device, for example the PE device 202b, it may be advantageous to import into the PE device 202b, existing user configuration information generated and/or updated via the PE device 202a. The existing user configuration information may be downloaded into the PE device 202b, and may be utilized, for example, to configure the PE device 202b with similar operations preferences as with the PE device 202b, which are specific to the user of both devices. The PE device 202b may be enabled to receive the user configuration information directly from the PE device 202a. For example, the PE devices 202s and 202b may be enabled to communicate directly via the plurality of communication interfaces 206. The PE device 202b may be enabled, for example, to request and/or receive the user configuration information from the PE device 202a via the PAN interface 208, the WLAN interface 210, the cellular interface 212, and/or the device-specific interface 214. In some instances, the device 202b may also be enabled to receive the user configuration information via a networked device, for example the networked device 204, which may be utilized and a centralized depository for user configuration information accessible by one or more users. For example, user configuration information developed, stored, and/or updated by the PE device 202a via the networked device 204 may be received by PE device 202b from the networked device 204.

The PE device 202b may be enabled, for example, to request and/or receive the user configuration information from the networked device 204 via the network 216 and/or the plurality of communication interfaces 206. The downloading and/or use of the user configuration information by the PE device 202b may be performed manually, based on user commands for example; and/or it may be performed automatically, based on, for example, specific use condi-

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tions. For example, initiating download and configuration of the PE device 202b utilizing existing user configuration information may be performed via user commands communicated into the PE device 202b, via the user interface modules 166 in the system 150 for example, substantially as described in FIG. 1B. In some instances, it may be determined whether a match may exist between a user of the PE device and identity of user corresponding to user configuration information stored within the PE device 202a. The networked device 204 may be operable to automatically trigger download and configuration of the PE device 202b utilizing existing user configuration information.

FIG. 3 is a flow chart that illustrates use of stored user preference information to configure a secondary personal electronic (PE) device, in accordance with an embodiment of the invention. Referring to FIG. 3, there is shown a flow chart 300 comprising a plurality of exemplary steps, which may enable.

In step 302, user configuration information may be developed via a first personal electronic (PE) device. For example, user configuration information may be generated and/or updated via the PE device 202a, substantially as described in FIG. 2. In step 304, the PE device may be communicatively coupled to networked devices to enable generation, updating, and/or storage of user configuration information. For example, the PE device 202a may be communicatively coupled to the networked device 204, substantially as described in FIG. 2, to enable uploading of user configuration information. In an embodiment of the invention, the coupled networked device may also be utilized to perform the generation and/or updating of the user configuration information based on communication by the PE device.

In step 306, user configuration information may be uploaded from the PE device to the networked device. For example, user configuration information may be uploaded from the PE device 202a to the networked device 204. In step 308, a second PE device may be communicatively coupled to the first PE device and/or the networked devices. For example, the PE device 202b may be communicatively coupled to the PE device 202a, and/or the networked device 204, via the network 216 and/or the plurality of communication interface 206, substantially as described in FIG. 2. In step 310, the second PE device may download and use user configuration information. For example, the PE device 202b may download the user configuration information from the PE device 202a and/or the networked device 204, and the downloaded user configuration information may be utilized to enable configuring the PE device 202b using, for example, existing user operational preferences.

Various embodiments of the invention may comprise a method and system for a networked self-configuring communication device utilizing user preference information. The personal electronic (PE) device 202a may enable generation, updating, and/or storage of user configuration information. The user configuration information may comprise information pertaining to device configuration and/or operational preferences specific to the device user and/or various use settings, connectivity, and/or use of available resources. The generation, updating, and/or storage of the user configuration information may be performed manually and/or automatically, and may be performed directly within the PE device 202a and/or via the networked device 204. The generation, updating, and/or storage of the user configuration information may also be performed directly within the PE device 202a, and/or via the networked device 204, which may be communicatively coupled to the PE device 202a.

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The PE device **202b** may be enabled to communicatively couple to the PE device **202a** and/or the networked device **204**. The PE device **202b** may then be enabled to download existing user configuration information from the PE device **202a** and/or the networked device **204**; and the downloaded user configuration may be utilized to configure the PE device **202b**.

Another embodiment of the invention may provide a machine and/or computer readable storage and/or medium, having stored thereon, a machine code and/or a computer program having at least one code section executable by a machine and/or a computer, thereby causing the machine and/or computer to perform the steps as described herein for a networked self-configuring communication device utilizing user preference information.

Accordingly, the present invention may be realized in hardware, software, or a combination of hardware and software. The present invention may be realized in a centralized fashion in at least one computer system, or in a distributed fashion where different elements are spread across several interconnected computer systems. Any kind of computer system or other apparatus adapted for carrying out the methods described herein is suited. A typical combination of hardware and software may be a general-purpose computer system with a computer program that, when being loaded and executed, controls the computer system such that it carries out the methods described herein.

The present invention may also be embedded in a computer program product, which comprises all the features enabling the implementation of the methods described herein, and which when loaded in a computer system is able to carry out these methods. Computer program in the present context means any expression, in any language, code or notation, of a set of instructions intended to cause a system having an information processing capability to perform a particular function either directly or after either or both of the following: a) conversion to another language, code or notation; b) reproduction in a different material form.

While the present invention has been described with reference to certain embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted without departing from the scope of the present invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the present invention without departing from its scope. Therefore, it is intended that the present invention not be limited to the particular embodiment disclosed, but that the present invention will include all embodiments falling within the scope of the appended claims.

The invention claimed is:

1. A system comprising:

- a plurality of computing devices connected via one or more networks, wherein the system is configured to receive login information corresponding to a first user; identify the first user based on the login information; retrieve user configuration information corresponding to the first user;
- control provision of a media content streaming service to a first computing device of the plurality of computing devices based on the user configuration information corresponding to the first user;
- update the user configuration information corresponding to the first user based on the provision of the media content streaming service to the first computing device;

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receive login information corresponding to the first user from a second computing device of the plurality of computing devices;

identify the first user based on the login information received from the second computing device;

retrieve the updated user configuration information corresponding to the first user; and

control provision of the media content streaming service to the second computing device based on the updated user configuration information corresponding to the first user.

2. The system of claim 1, wherein

the plurality of computing devices are distinct devices configured to be communicatively coupled via the one or more networks.

3. The system of claim 1, wherein

at least one of the plurality of computing devices is configured to receive preference information corresponding to the first user from the first computing device.

4. The system of claim 3, wherein

at least one of the plurality of computing devices is configured to generate the user configuration information corresponding to the first user based on the preference information corresponding to the first user received from the first computing device.

5. The system of claim 1, wherein

at least one of the plurality of computing devices is configured to transmit at least a portion of the user configuration information corresponding to the first user to the first computing device upon identifying the first user based on the login information received from the first computing device.

6. The system of claim 1, wherein

at least one of the plurality of computing devices is configured to dynamically develop the user configuration information corresponding to the first user based on the provision of the media content streaming service to the first computing device.

7. The system of claim 1, wherein

the user configuration information corresponding to the first user includes media consumption settings including at least video and audio presentation preferences corresponding to the first computing device and the second computing device.

8. The system of claim 7, wherein

at least one of the plurality of computing devices is configured to control provision of the media content streaming service to the first computing device and the second computing device based on the media consumption settings corresponding to the first computing device and the second computing device.

9. The system of claim 8, wherein

the media consumption settings corresponding to the first computing device are different than the media consumption settings corresponding to the second computing device.

10. The system of claim 1, wherein

the user configuration information corresponding to the first user includes information identifying content reproduction capabilities corresponding to the first computing device and the second computing device.

11. The system of claim 10, wherein

at least one of the plurality of computing devices is configured to control provision of the media content streaming service to the first computing device and the second computing device based on the information

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identifying content reproduction capabilities corresponding to the first computing device and the second computing device.

12. The system of claim 11, wherein

at least one of the plurality of computing devices is configured to control provision of the media content streaming service to the first computing device and the second computing device by selecting a version of content, from a plurality of stored versions of content, to be streamed to the first computing device or the second computing device based on the information identifying content reproduction capabilities corresponding to the first computing device or the second computing device.

13. The system of claim 1, wherein

at least one of the plurality of computing devices is configured to identify connectivity related information corresponding to the first computing device and the second computing device.

14. The system of claim 13, wherein

at least one of the plurality of computing devices is configured to control provision of the media content streaming service to the first computing device and the second computing device based on the connectivity related information corresponding to the first computing device and the second computing device.

15. The system of claim 14, wherein

the connectivity related information includes at least one of a network type, bandwidth level and quality of service capabilities.

16. The system of claim 14, wherein

at least one of the plurality of computing devices is configured to control provision of the media content streaming service to the first computing device and the second computing device by selecting a version of content, from a plurality of stored versions of content, to be streamed to the first computing device or the second computing device based on the connectivity related information corresponding to the first computing device and the second computing device.

17. The system of claim 1, wherein

at least one of the plurality of computing devices is configured to control provision of the media content streaming service to the first computing device and the second computing device from a third system communicatively coupled to the system via a network.

18. The system of claim 1, wherein

at least one of the plurality of computing devices is configured to control provision of the media content streaming service to the first computing device and the second computing device from a server remote from the system, the first computing device and the second computing device.

19. The system of claim 1, wherein

the user configuration information identifies preferred categories of content corresponding to the first user.

20. The system of claim 19, wherein

at least one of the plurality of computing devices is configured to control provision of content of the media content streaming service to the first computing device and the second computing device based on the preferred categories of content corresponding to the first user.

21. The system of claim 1, further comprising:

memory configured to store user configuration information corresponding to a plurality of users including the first user, wherein

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at least one of the plurality of computing devices is configured to select the user configuration information corresponding to the first user, from among the plurality of configuration information, based on the login information received from the first computing device.

22. The system of claim 1, wherein

at least one of the plurality of computing devices is configured to update the updated user configuration information corresponding to the first user based on the provision of the media content streaming service to the second computing device.

23. A system comprising:

a plurality of computing devices connected via one or more networks, wherein the system is configured to receive login information corresponding to a first user; identify the first user based on the login information; retrieve user configuration information corresponding to the first user;

control provision of a media content streaming service to a first electronic device based on the user configuration information corresponding to the first user;

update the user configuration information corresponding to the first user based on the provision of the media content streaming service to the first electronic device;

receive login information corresponding to the first user from a second electronic device;

identify the first user based on the login information received from the second electronic device;

retrieve the updated user configuration information corresponding to the first user; and

control provision of the media content streaming service to the second electronic device based on the updated user configuration information corresponding to the first user.

24. The system of claim 23, wherein at least one of the plurality of computing devices is configured to:

receive preference information corresponding to the first user from the first electronic device; and

generate the user configuration information corresponding to the first user based on the preference information corresponding to the first user received from the first electronic device.

25. The system of claim 23, wherein

the user configuration information corresponding to the first user includes media consumption settings including at least video and audio presentation preferences corresponding to the first electronic device and the second electronic device,

at least one of the plurality of computing devices is configured to control provision of the media content streaming service to the first electronic device and the second electronic device based on the media consumption settings corresponding to the first electronic device and the second electronic device, and

the media consumption settings corresponding to the first electronic device are different than the media consumption settings corresponding to the second electronic device.

26. The system of claim 23, wherein

the user configuration information corresponding to the first user includes information identifying content reproduction capabilities corresponding to the first electronic device and the second electronic device, and

at least one of the plurality of computing devices is configured to control provision of the media content

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streaming service to the first electronic device and the second electronic device by selecting a version of content, from a plurality of stored versions of content, to be streamed to the first electronic device or the second electronic device based on the information identifying content reproduction capabilities corresponding to the first electronic device or the second electronic device.

27. A content provision method performed by a content provision system comprising a plurality of computing devices connected via one or more networks, the method comprising:

performing, by the plurality of computing devices connected via one or more networks

receiving login information corresponding to a first user;

identifying the first user based on the login information;

retrieving user configuration information corresponding to the first user;

controlling provision of a media content streaming service to a first electronic device based on the user configuration information corresponding to the first user;

updating the user configuration information corresponding to the first user based on the provision of the media content streaming service to the first electronic device;

receiving login information corresponding to the first user from a second electronic device;

identifying the first user based on the login information received from the second electronic device;

retrieving the updated user configuration information corresponding to the first user; and

controlling provision of the media content streaming service to the second electronic device based on the updated user configuration information corresponding to the first user.

28. The method of claim **27**, further comprising performing, by the plurality of computing devices connected via one or more networks:

receiving preference information corresponding to the first user from the first electronic device; and

generating the user configuration information corresponding to the first user based on the preference information corresponding to the first user received from the first electronic device.

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29. The method of claim **27**, wherein

the user configuration information corresponding to the first user includes information identifying content reproduction capabilities corresponding to the first electronic device and the second electronic device, and the method further comprises performing, by the plurality of computing devices connected via one or more networks controlling provision of the media content streaming service to the first electronic device and the second electronic device by selecting a version of content, from a plurality of stored versions of content, to be streamed to the first electronic device or the second electronic device based on the information identifying content reproduction capabilities corresponding to the first electronic device or the second electronic device.

30. A system comprising:

a plurality of computing devices connected via one or more networks;

means for receiving login information corresponding to a first user;

means for identifying the first user based on the login information;

means for retrieving user configuration information corresponding to the first user;

means for controlling provision of a media content streaming service to a first electronic device based on the user configuration information corresponding to the first user;

means for updating the user configuration information corresponding to the first user based on the provision of the media content streaming service to the first electronic device;

means for receiving login information corresponding to the first user from a second electronic device;

means for identifying the first user based on the login information received from the second electronic device;

means for retrieving the updated user configuration information corresponding to the first user; and

means for controlling provision of the media content streaming service to the second electronic device based on the updated user configuration information corresponding to the first user.

* * * * *

FORM 19. Certificate of Compliance with Type-Volume Limitations

Form 19
July 2020

**UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT**

CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITATIONS

Case Number: 2023-1750

Short Case Caption: Avago Technologies International Sales Pte. Ltd. v. Netflix, Inc.

Instructions: When computing a word, line, or page count, you may exclude any items listed as exempted under Fed. R. App. P. 5(c), Fed. R. App. P. 21(d), Fed. R. App. P. 27(d)(2), Fed. R. App. P. 32(f), or Fed. Cir. R. 32(b)(2).

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Date: 07/24/2023

Signature: /s/ Daniel S. Young

Name: Daniel S. Young